Anthem Blue Cross and Blue Shield
P.O. BOX 4445
Mail Stop GAG06-006
Atlanta, GA 30302

Anthem. BlueCross BlueShield

09/12/2022

Your Request

Reference Number: UM34156867
Place of Service: On Campus Outpatient Hospital
Provider: JAIME SCHWARTZ and TLC SURGERY CENTER
More details found at the end of this letter.

Confidential Health Plan Information for:
MARY BERNS
Date of Birth: 09-06-1958

We need more information to complete our review
Read on for important information.

Reviewed for your plan by Anthem UM Services, Inc.

Dear MARY BERNS,

Thank you for trusting us with your health care coverage. Recently, you or your doctor asked us to review a request for the service listed in the table. We want you to know that we need more time to review this request. That's because we don't have enough clinical information about your health status to decide if the services are considered medically necessary under your plan.

We're asking your provider for the following clinical information:

Clinical-Needed
Explanation of services to be performed
MDO notes
Plan of care

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Symptoms
Treatment history
Current clinical information

Please feel free to contact me directly
Sherry L
844-644-8101 CVM extension
1664030701

Fax numbers
877-663-2740
(855) 207-9930

Attention Providers

You may supply the requested information by calling us at the number on your member ID card.

To review this request for benefits, we need the necessary information within 45 calendar days of the receipt of this letter. Once received, we'll complete the review within 15 calendar days. Otherwise, we'll have to base our decision on the information we have available.

If you decide to continue with the treatment before our review is completed we can't guarantee benefits will be available for the requested service. Please refer to your description of benefits for details.

Get the most from your health plan
This is a perfect time to revisit your plan information and review what's covered, as well as your copays, deductibles and coinsurance. Not sure how your plan works? Refer to your plan documents or log in to your online account if you have one. And, of course, you can always call the number on your ID card.

Sincerely,

Anthem Care Management

Note: We're also sending a copy of this letter to JAIME SCHWARTZ and TLC SURGERY CENTER.

Providers: You are required to return, destroy or further protect any PHI received on this document pertaining to members that you are not currently treating. Providers are required to immediately destroy any such PHI or safeguard the PHI for as long as it is retained. In no event are you permitted to use or re-disclose such PHI.

Your Health Care Team

Member	MARY BERNS	**Date of Birth**	09/06/1958
Provider	JAIME SCHWARTZ	**Status**	Out-of-network
Facility	TLC SURGERY CENTER	**Status**	Out-of-network

Request Details

Service	Start Date	End Date	Quantity	Code	Description
Surgical	10/19/2022	12/31/2022	4 Unit(s)	CPT 15879 50	SUCTION ASSISTED LIPECTOMY LOWER EXTREMITY
Surgical	10/19/2022	12/31/2022	3 Unit(s)	CPT 15877	SUCTION ASSISTED LIPECTOMY TRUNK
Surgical	10/19/2022	12/31/2022	1 Unit(s)	CPT 15839	EXCISION EXCESSIVE SKIN & SUBQ TISSUE OTHER AREA
Surgical	10/19/2022	12/31/2022	2 Unit(s)	CPT 15878 50	SUCTION ASSISTED LIPECTOMY UPPER EXTREMITY

Jaime Schwartz, MD
240 S. LA Cienega BL # 200
Beverly Hills CA 90211

August 30, 2022

Re: Patient: Mary Berns
ID # UBC340A23550
DOB: 9-6-1958
Case Ref # UM34156867
Fax # 800-676-2583

To Whom It May Concern,
We are requesting approval for surgery to treat the diagnosed disease Lipedema. We are requesting a 12-month Authorization as the procedures are staged. We are also requesting a gap exception for both Dr Schwartz and TLC Surgical Center

I have also attached for your review:
1.Letters and notes from non -surgeons documenting this patients Lipedema diagnosis.
2 proofs of attempts to manage condition with conservative treatment
3. Letter of medical necessity, exam notes and surgical plan from Dr Schwartz
4 Patient letters describing how Lipedema is affecting her life
5. Photos
6. articles and documentation on the treatment of Liposuction for the treatment of Lipedema.

Patients with Lipedema have been misdiagnosed despite this disease identified by the Mayo clinic in the 1940s.
Thank you for your attention to this important matter and ensuring a high-quality review of this request.

Please feel free to contact me if you require any additional information.

Best regards,

Kelly Williams

Total Lipedema Care

Jaime S. Schwartz, MD, FACS

Board Certified Plastic Surgeon

Associate Clinical Professor of Surgery- USC Keck School of Medicine

Division of Plastic and Reconstructive Surgery

tlc@drjaimeschwartz.com

T: (310)882-5454 option 5

Mary Berns -> #1091711 Letter of Medical Necessity for Lipedema

Patient #: 8583 • DOB: 1958-09-06

Patient:	Mary Berns	**Type:**	Dr. Herbst Templates
Document #:	1091711	**Document By:**	Karen Herbst
Subject:	Letter of Medical Necessity for Lipedema	**Document Date:**	08/02/2021

TOTAL LIPEDEMA CARE

Patient Name: Berns , Mary
DOB: 1958-09-06
Age: 62
Patient Address: , Central Minnesota, 0
Patient Phone:320-492-7404
Patient Email: Mary.berns@gmail.com

On 8/2/2021, I saw Mary Berns. Upon exam, it is clear that Ms. Berns has lipedema.

Lipedema is a chronic disease presenting in women during puberty or other times of hormonal, weight and/or shape change such as pregnancy or menopause, characterized by symmetric enlargement of nodular, painful deposition of inflamed and fibrotic subcutaneous adipose tissue. Lipedema was first named as a medical condition in 1940 at the Mayo Clinic[1] and in Germany.[2] The diagnosis of lipedema is largely clinical and based on criteria initially established in 1951 by Drs. Wold, Allen and Hines.[3] Lipedema starts in the lower extremities leading to circumferential bilateral lower extremity enlargement typically seen extending from the below the umbilicus to the ankles resulting in edema, pain and bruising; with secondary lymphedema, fibrosis and spreading of abnormal tissues to the trunk and arms occurs during later stages. Unfortunately as the lipedema tissue grows, the deep fascia and muscle are also affected reducing the function of the lymphatic pump.

Lipedema is a hereditary disease and recently the first mutated gene *AKR1C1* was discovered resulting in a slower and less efficient reduction of progesterone to hydroxyprogesterone and increased subcutaneous fat deposition in variant carriers, confirming hormones as important in lipedema.[4] Lipedema also clearly manifests as a connective tissue disorder characterized by loss of elasticity in the skin[5] and the aorta,[6] hypertrophic adipocytes, inflammatory cells, and dilated leaky blood and lymphatic vessels.[7, 8]

Ms. Berns has lipedema in her legs, arms and trunk that includes nodules and pain in these areas. Her hands, feet, and upper trunk have been spared. She has other signs of lipedema including a negative Stemmer's sign and abnormal fat pad development, disproportion, pain and dysmobility.

She has Stage 2 Type III and IV lipedema which means she does not have a prominent cuffing sign in her ankles, though she has lipedema tissue around the inside and outside of the ankle and the Achilles.

Ms. Berns is also developing early stages of lipo-lymphedema and thus her lipedema needs to be treated. She has tried conservative measures for many months and while conservative therapies can reduce swelling and pain for a short time, removing the diseased tissue with surgery is necessary to reduce symptoms and progression long-term.

Lipedema is distinct from non-lipedema obesity, although some, not all, patients can be obese. The adipose tissue accumulation is bilateral and symmetrical in the extremities, with the feet and hands spared from lipedema fat accumulation unless there is loss of elasticity as in hypermobile Ehlers Danlos where the skin has lost elasticity and fat can grow on the hand (with or without obesity). A hallmark of earlier stages of lipedema is the discrepancy in fatty tissue of the extremities compared to the trunk. This is in contrast to the fat associated with lifestyle-induced obesity, which is usually global and proportionate, affecting the abdomen equal or greater than the hips.

Women with lipedema find it difficult to lose weight before a needed surgery or other procedures. There is a significant number of women with lipedema who have failed bariatric surgery because they were already controlling their diet but just not losing weight.[9-11]

Besides the many painful nodules that women with lipedema have, studies indicate that women with lipedema do not have the muscle strength like people who have non-lipedema obesity, are subject to more injuries and have poorer functional capacity.[12]

Thus, to improve function and reduce pain, lipedema surgery is recommended for Ms. Berns.[13]

References

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Electronically signed by Karen L. Herbst, MD, PhD 2021-08-02 3:49 PM

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Mary Berns -> #1091448 New Visit
Patient #: 8583 • DOB: 1958-09-06

Patient:	Mary Berns	**Type:**	Dr. Herbst Templates
Document #:	1091448	**Document By:**	Sarah Arndt
Subject:	New Visit	**Document Date:**	08/02/2021

TOTAL LIPEDEMA CARE

Dr. Herbst - New Patient Visit

Patient Name: Berns , Mary
DOB: 1958-09-06
Age: 62

Referring Physician: I have a provider that I go to for hormone testing and treatment. Her name is Carol Brinkman. She works out of a clinic called Simplicity Health in St. Cloud, MN.
My primary care doctor that I go to for illnesses and preventative care is Dr. Omann at Allina Clinic in Annandale, MN.
Phone number: Carol Brinkman: 320-227-5000
Dr. Omann: 320-274-3744
Fax number: Carol Brinkman fax :320-227-5025
Allina Clinic fax: 320-274-8194

Pharmacy Name: Thrifty White Pharmacy
246 Elm Street West, Annandale, MN 55302
Phone: 320-274-3062. Fax: 320-274-6546
Pharmacy Number: Phone: 320-274-3062
Fax: 320-274-6546
Pharmacy Address: 246 Elm Street West
Annandale, MN 55302

CC: Lipedema. Needs diagnosis.

HPI: Mary Berns is a 62 year young female with a history of Lipedema. She believes she has lipedema but is unsure and seeking diagnosis. A gentle massage does not hurt but if you push the lipedema tissue with a finger it is very painful. When a child will bump her it is painful. At night she will wake up with pain. Sometimes it feels like restless leg syndrome - she will get up and walk which helps or take Advil. Sometimes she feels tingling.
She was exposed to a lot of chemicals as a child (DDT). Dad was a crop duster - she cleaned chemicals off the wings with no protection.
She is very sensitive to chemical smells. She can handle some essential oils. She cannot handle perfume or cleaning supplies. She will get nauseous and a headache. She wants to be more mobile and wants the pressure off her knees.

Onset: Worn shorts twice in her life. She has cellulite looking tissue on the back of her thighs in high school.

Swelling? Yes around the outside of her right ankle.

Swelling worse during summer? Yes

Swelling worse when standing? Maybe

Swelling worse when sitting? Maybe

Limbs tight and heavy especially at end of day? Yes

Do you elevate your legs? No

Does swelling resolve with elevation or sleeping overnight? Yes; she is much better in the morning especially of the ankles

Areas with lipedema are unaffected by caloric restriction? Lost 35 lbs a few years ago (700 calories/day x 3 years); she was still embarassed to wear shorts or a swim suit. Leg lobules of fat did not reduce. She loses weight from the head on down. In the last 15 years she has developed a belly that she cannot lose weight from. Her legs may lose weight but the lipedema shape is still there. She was off her thyroid meds and now her arms are much larger.

Reduced ability to get around (ambulation)? Yes she is a lot less mobile. Her knees also have issues and she has arthritis.

Any areas of your body that are colder than other parts? No

Any decrease in social activity? No. She is embarassed because people stare at her legs. This is why she will not wear shorts.

Diet: I have tried the Ketogenic diet, Paleo and whole food.I have had food sensitivity testing done. I have had my DNA done through 23. I am not generally hungry in the morning except when I am having bouts of acid reflux and potential ulcers. I have a gastrointestinal appointment coming up but it is being treated with 40 mg of Prilosec and it seems to be working. I eat after ten am. Last meal 7PM. I try to eat nothing with more than 200 calories at a time during the day as I am busy and not hungry as much so I eat when I am hungry. It usually adds up to about 7-800 calories by evening. I am very hungry at dinner so I will eat 800 calories at dinner. I stay under 1800 calories every day. On a rare occasion I might have 2200. NEVER over that.

Exercise: It hurts a lot to walk so I don't walk. I recently bought a recumbent stationary bicycle. My goal is to ride that each day. I don't exercise as it is painful but I usually don't sit during the day. I'm either chasing grandkids (6 age 6 and under) or out running errands or taking care of the house and yard. On days that I work (2 a day and 5 a day for 3 months in the winter I do sit at a desk). I was lifting weights before COVID but then the gyms closed. The next question asks if I sweat. I would like to expand on that. I have Hyperhydrosis. So I sweat excessively. My daughter inherited it worse than what I have and she had surgery at the Mayo Clinic where they severed her sympathetic nerve which did wonders, but the compensatory sweating is now in her feet. I used to leave puddles from my hands. After menopause it is not as bad. Yes sweating.

Pain
Average Daily Pain Score (1-10):
Worst Daily Pain Score (1-10): 5
Lowest Daily Pain Score (1-10): 5
Pain is in the: My knees hurt with any activity, especially walking downhill. I have had torn meniscus repaired. I also have Osteoporosis and a lack of cartilage in my knees. My legs and hip keep wake me up several times at night. If I take Advil I can sleep better.
I'm not sure if I have restless leg syndrome but maybe. I've never asked about it.
Somedays my whole body hurts. I do have arthritis in my knees as well. Maybe all over? I don't know.

Conservative Therapy
Compression Garments: I Just started lymphatic drainage massages recently again. I was doing them before COVID. Ordered compression garments on Amazon.
Sequential Pneumatic Compression Pump: None
Manual Lymphatic Drainage Therapy: Yes just started again since COVID; prior to COVID once every few months.
Deep Tissue Therapy: None

Weight
Any history of weight gain: Yes, I gained 60-70 pounds with each of my three children. I was able to lose it after the first two and some with the third, but it has been increasing ever since. I was done with menopause at 42 and that has made it hard coupled with probable undiagnosed thryoid issues. I would be told my goiter was large but tests always came back normal until a doctor finally tested my antibodies. This went on until I was about 52. Once I got diagnosed with Hashimotos and treated in 2010 it stopped the weight gain but I had to work hard to lose some weight. I was up to 235 at that time. I got down to 200 in 2013. My weight creeped back up to 213 by 2018. I then went on a strict diet of about 900 calories a day with just vegetable a little fruit and 2 lean proteins a day for 2 months and lost 10 pounds. I lost the remaining 18 over 6 months and got down to 185 before Covid hit and I did this by eating low fat, lean protein, salads with low calorie low fat dressings, fruits and vegetables and not cheating EVER (not even cake on my 60th or a danish when I was in Italy). Then COVID hit and I ran out of my thyroid meds and was off them for a year and didn't watch what I ate as much and I'm back up to 214.
Any history of weight loss: Yes, I lose most of my weight in my upper body. It's like it starts at my neck and works its way down, but my legs always remain larger. Even when I lost weight and was at my lowest in decades I had overhang below my knees at the top of my calves and above my knees that ten years ago at a heavier weight were not there.

Ever use of the following meds
Phentermine: No
Dextroamphetamine: No
Adderall: No
Metformin: No

MEDICAL HISTORY
First Menses: 15
Menopause: Done at 42
3 Pregnancy(ies)
3 Live Births
Hashimotos
Hyperhidrosis
Sinus infections/post nasal drip
Osteoporosis
Obesity
Arthritis
Acid reflux
Hypothyroid
Migraine Headaches
I was exposed to a lot of chemicals as a child. My dad was a crop duster and one of my jobs was to clean the chemicals off the wings of the plane with no gloves, goggles or any protection. I am very sensitive to chemical smells but I don't know if this is related.
Our well was also contaminated so we didn't drink the water but we did bathe in it and brush our teeth with it and cook with it.

SURGICAL HISTORY
Torn meniscus-cartilage removed. Broken ankle -1995 Breast tissue removed under left arm

MEDICATIONS
Allergies: Penicillin, recent hives from cephalexin and
Medications: Omeprazole, Levothroxine and Liothyronine

[Medications were reviewed]

SOCIAL HISTORY
Smoking: No
Alcohol: 0
Any other drugs: No

FAMILY HISTORY
Daughter had liposuction for her legs for probable lipedema
Daughter has venous insufficiency - her legs throbbed
Four sisters do not have lipedema
Mother likely had lipedema
Maternal grandmother also looks like she had lipedema

REVIEW OF SYSTEMS
General: **Weight loss, weight gain, difficulty sleeping.** No complaints of: flu-like symptoms
HEENT: No complaints of: thick skull fat, difficulty swallowing, neck feels swollen, dry eyes, dry mouth
CV: No complaints of: palpitations, chest pain
Dermatology: **Easy bruising, burning sensations, stretch marks.** No complaints of: itching in skin/tissue, water trickling under skin, keloids
Endocrine: **Fatigue 3/10.** No complaints of: cold feet/hands, pre-diabetes, feeling thirsty all the time
Gastrointestinal: **Constipation.** No complaints of: bloating, diarrhea, stomach/intestinal pain, nausea, vomiting, early satiety
Genitourinary: **Pain with intercourse, incontinence, nocturia 5 times**
Immunology/Infectious Disease/Allergy: **Cellulitis, Allergies** (I don't know but I take Claritin every day. I have so much mucous in the morning I can fill two paper towels with the drainage down the back of my throat. I recently had Clarifix done at an ENT and that seems to be helping a ton. I can't answer your question about C-reactive protein and d-dimer blood but I chose no because I had to answer the question to submit the survey. I have not had those tested.)
Musculoskeletal: **Muscle aches, joint aches, low back pain.** No complaints of: muscle weakness, tight tendons, muscle cramps, flexible joints
Neurology: No complaints of: vibrations in tissue, vertigo, hearing loss, poor concentration, numbness
Pulmonary: **Frequent congestion.** No complaints of: sleep apnea, shortness of breath
Psychiatry: No complaints of: depression, anxiety, sexual/physical/emotional trauma
Vascular: **Water retention.** No complaints of: blood clot, swelling, dark skin on lower legs

Other symptoms or concerns:

PHYSICAL EXAM
BP: 141/100 HR: 94 Weight: 214.5 Lbs 97.4 Kgs Height: 5'7" BMI: 33.59 TEMP: 97.5
Waist (cm): 86.5
Hips (cm): 121
Waist-to-hip-ratio: 0.71
A WHR of ≥0.85 cm is suggestive of obesity in women (World Health Organization, 2011). A value <0.85 is suggestive of increased fat on the lower part of the body.

General: Woman in no apparent distress
Gait: Legs rub together from groin to knees
HEENT: PERRLA; EOMI; does not wear glasses
Neck: No thyroid enlargement or nodules
Heart: Regular rate and rhythm; no murmurs, rubs or gallops
Lungs: Clear to auscultation
Abdomen: Non-distended, soft
Vascular: Stemmer negative on the hands and feet; No pitting edema; no evidence of acrocyanosis

LOOSE CONNECTIVE (FAT) TISSUE EXAM
Head and Neck
Cranial fat: Normal
Neck: Acanthosis nigricans: None
Lymph nodes: None
Supraclavicular fat: Normal

Back
Dorsocervical fat pad: None
Folds of connective tissue on the sides of the back or under the bra: Yes
Lordosis: No
Shelf of tissue above the buttocks: No

Arms
Axillary: Acanthosis nigricans: No
Axillary: Full and tender: No
Increased tissue upper arm: Yes
Palpable nodules upper arm: Yes
Increased tissue lower arm: Yes
Palpable nodules lower arm: Yes
Wrist cuff: Yes
Hand fat base thumb: No
Hand fat between MCPs: No
Stemmer hand: Negative
Heavy upper arms: Yes

Abdomen
Palpable nodules: Yes above and below

Panniculus: Grade 1: the panniculus reaches the pubic hair but not the genitals
Heavy panniculus: Yes
Palpable nodules suprapubic: No

Legs
Striae: Yes
Mattress pattern thigh tissue: Yes
Palpable nodules thigh tissue: Yes
Fat overhanging knee: Yes
Fat covers knee: No
Fat covers shin: Yes
Medial knee lobule: Yes
Stovepipe legs: No
Increased tissue lower leg: Yes
Palpable nodules calves: Yes
Ankle cuff: Yes
Fat around lateral malleoli: Yes
Fat around medial malleoli: Yes
Fat around Achilles: Yes
Fat on top of foot: No
Stemmer foot: Negative

Piezogenic papules: No
Flat feet: No

Vascular Exam
Telangiectasia/Spider Veins: Yes
Visible Varicose Veins: Yes of the calves
Non-pitting edema: Yes
Corona phlebectatica: No
Pitting edema: No

Areas of Hypothermia
Arms: Arms
Legs: No
Buttocks: No
Hips: Yes

Joints
Valgus of knees: No
Varus of ankles: No

General
Tissue tender in areas affected: Yes
Hands and Feet Not Affected: Yes
Bruising currently: Left lower leg; right lower leg posterior
Fibrotic Tissue: Only in the nodules
Heavy Tissue: Yes upper arms

Beighton Score:
5th digits - 0/2
Thumbs - 0/2
Elbows - 2/2
Knees - 0/2
Hips - able to bend and touch the floor keeping the legs together and straight = 0
Score: = 2/9
Not flexible as a child

Diagnostic Criteria for lipedema
Female: **Yes**
Bilateral and symmetrical manifestation with minimal involvement of the feet: **Yes**
Minimal pitting edema: **Yes**
Negative Kaposi–Stemmer sign: **Yes**
Pain, tenderness on pressure: **Yes**
Easy bruising: **Yes**
Persistent enlargement after elevation of the extremities or weight loss: **Yes**
Arms are affected 80% of the time: **Yes**
Hypothermia of the skin: **Yes**
Swelling worsens with orthostasis in summer: **Yes**
Lipedema tissue unaffected by caloric restriction, exercise, bariatric surgery: **Yes**
Vascular manifestation such as cherry angiomas, telangiectasia, venous disease: **Yes**
Does the patient meet criteria for lipedema? **Yes**

Labs:
NA

The lower extremity functional scale (**LEFS**) is a measure of disability for the legs. Lower scores indicate more dysfunction.
Score = 49/80

Five Questions for Hypermobility: 0/5
A positive answer for two or more questions has a sensitivity of 91%, a specificity of 75% for predicting hypermobile joints (BMC Musculoskelet Disord. 2020; 21: 174).

ASSESSMENT

1. **Lipedema Staeg 2 Type III and IV**
Lipedema of the abdomen

Lipedema: Lipedema is a congenital enlargement (hyperplasia of the adipose tissue) of the loose connective (fat) tissue on the legs almost exclusively seen in women by the third decade. According to an epidemiologic study by Földi E and Földi M, lipedema affects 11% of the female population. Lipedema was initially described by Allen and Hines in 1940; its etiology remains unknown and it remains under-diagnosed. Classically women with lipedema have disproportionate bodies with

larger legs and hips than arms and waist. In 1951 Wold et al. analyzed 119 cases and provided the diagnostic criteria for lipedema:
1) Almost exclusive occurrence in women
2) Bilateral and symmetrical manifestation with minimal involvement of the feet
3) Minimal pitting edema; the Kaposi-Stemmer sign is negative
4) Pain, tenderness on pressure
5) Increased vascular fragility; easy bruising
6) Persistent enlargement after elevation of the extremities or weight loss
7) Arms are affected 80% of the time
8) Hypothermia of the skin
9) Swelling worsens with orthostasis in summer
10) Unaffected by caloric restriction
The stage of disease refers to how the skin and tissue appear visually:
When the skin is still smooth, the lipedema is stage 1.
When the skin and tissue have indentations in a mattress pattern, the lipedema is stage 2. Lipedema stage 3 has larger out-pockets of tissue.
The types of lipedema refer to the location of the fat:
Type I: In the area of the buttocks and hips (saddle bag phenomenon)
Type II: Buttocks to knees, with formation of folds of fat around the inner side of the knee
Type III: Buttocks to ankles
Type IV: Arms
Type V: Legs
In lipedema, there are increased macrophages in tissue, a microangiopathy (leading to increased bruising), dilation of subdermal capillaries which can be seen as telangiectasias and petechiae on the skin, dilation and leakage of lymphatic vessels in the subcutaneous fat - leaking lymphatics into subcutaneous fat increases growth of adipose tissue in mouse models.
Diuretics such as Lasix concentrate proteins in the interstitium increasing the work load of the lymphatic system. Do not use diuretics.
Corticosteroids should be avoided as they weaken blood vessels (and lymphatics) and cause a rebound increase in adipose growth once stopped.

For any surgery, there must be professional manual lymphatic drainage at minimum one week before and for four weeks after the surgery - longer if there is a slow recovery. In lipedema and lymphedema (lymphatic dysfunction), there is difficulty in handling all the fluid and inflammation after surgery. This means there is a need for hands on MLD from a trained practitioner. Mismanagement of MLD after surgery would risk the development of difficult to control lymphedema. Adequate MLD after surgery is standard of care (https://pubmed.ncbi.nlm.nih.gov/34049453/).

2. **Lymphedema Stage 0-1** (lipolymphedema).

3. Varicose veins. ?Venous insufficiency.

PLAN
1. **Manual therapy**: Find a certied lymphedema therapist (CLT) who can provide manual lymphatic drainage therapy to reduce fluid, deeper manual or instrument assisted soft tissue therapy to reduce fibrosis, educate on skin care and compression and discuss the use of a sequential pneumatic compression pump.

https://klosetraining.com/therapist-directory/
https://lymphnet.org/find-treatment
https://www.clt-lana.org/

Tracy DeWolfe, *PT, STAR/C, CLT* 763-684-3888 17.6 miles	**Allina Health - Courage Kenny Rehab** *Buffalo Hospital*	300 Catlin Street Buffalo, MN 55313
Tamra Blahut, *MPT, CLT-LANA* 763-684-3880 17.7 miles	**Sister Kenny Sports & Physical Therapy** *Physical Therapy*	101 14th Street, Suite A Buffalo, MN 55313
Jennifer Majeski, *OTR/L, CLT* 320-373-2244 18.0 miles	**CentraCare Health Home Health & Hospice** *Home Health*	2035 15th Street North St. Cloud, MN 56303
Amy Bergeron, *PT, CLT-LANA* 320-534-3000 19.2 miles	**St. Benedict Senior Community - Sartell Rehab Suites** *Physical Therapy*	990 19th St S Sartell, MN 56377

Jessica Munsch, *OTR/L, CLT*
320-373-2005

Meeker Memorial Hospital
Occupational Therapy

612 South Sibley Avenue
Litchfield, MN 55325

2. Elevate your legs to help reduce swelling.

3. Venous duplex ultrasound of the legs to assess for venous insufficiency. Order provided.

4. Agree with lipedema reduction surgery.

5. Please have your therapist measure you for a compression garment: Bioflect or CZ Salus leggings. Open toes.

Please have your therapist help you get a pump if you respond well to manual lymphatic drainage therapy.

Lymph Pumps (E0652): I recommend two pumps for treatment of rare adipose disorders: Lymphapress Optimal (877-316-8458) or Flexitouch (866-435-3948). The benefit of the Lympha Press is you can treat both legs at one time. These are the only two pumps I allow my patients to use. It is not standard practice to prescribe sequential compression pumps (SCDs) usually reserved for prevention of deep venous thromboses or for treatment of cardiovascular edema (E0650; E0651). In the latter two situations, the lymphatic vessels are intact and pump normally. As a consequence of using SCDs in RADs, SCD pumps push the fluid up the leg into the abdominal area where it accumulates due to lymphatic dysfunction. As this fluid sits in the tissue with all its nutrients and protein, fat grows. From published data, we know that lymph makes fat grow (Nat Genet. 2005 Oct;37(10):1023-4). With the Lymphapress or Flexitouch, the abdomen is treated along with the leg and the chest is treated along with the arm preventing dangerous pooling of lymph fluid. A E0652 device with a segmented, multi-ported pump allows for individual pressure calibration at each port. This allows the patient to alter pressure in areas of severe pain as found in Dercum's disease or lipedema while obtaining a compression sleeve that treats the abdomen and/or chest.

ICD-10 codes for this visit
R60.9 Lipedema
I89.0 Lymphedema
I86.8 Varicose veins
I87.2 Chronic venous insufficiency??
M79. 605 Pain in the left leg
M79. 604 Pain in the right leg
M79.601 Pain in the right arm
M79.602 Pain in the left arm
R10.9 Unspecified abdominal pain

This visit was 60 minutes with >50% time spent counseling on lipedema and other causes of fat tissue growth and possible treatments that may help Mary.

Electronically signed by Karen L. Herbst, MD, PhD 2021-08-02 11:08 AM
Karen L. Herbst, MD, PC
Board Certified Endocrinology
Specialist in loose connective tissue disease
240 South La Cienega, Suite 200, Beverly Hills, CA, 90211
630 South Craycroft Road, Tucson, AZ, 85711
Phone: 310-882-5454
Fax: 310-747-5908

Mary Berns Receipts Timeline:

1-2-15
Receipt from Schuler Shoes for compressions socks

5-2-16
Receipt from Schuler Shoes for compression socks

6-6-6
Receipt from Schuler Shoes for compression socks

3-29-19
Two receipts from Schuler Shoes for compression socks

7-12-21
2 receipts for purchase of compression socks from Amazon

7-2-21
Receipt for consultation with Dr. Herbst

8-2-21
New Patient Notes from Dr. Herbst
Manual Therapy Prescription
Order from Dr. Herbst for Venous Duplex Ultrasound
(I had this done at Stellis Health in Buffalo, MN by Dr. Lawrence at I think the end of 2021.
If You need some documentation on that let me know.)

8-19-21
Order from Dr. Omann for DME

8-24-21
Receipt for pumps from Tactile Medical

9-22-21, 9-27-21 & 12-28-21
Receipts from Reliable Medical for compression socks and sleeves

Undated, but in this time frame, order for pumps and garments from Courage Kenny Rehabilitation Institute in Buffalo, MN. Allina would have processed this through my BCBS Anthem insurance. They should have record of this as well as the vein ultrasound I had done at Stellis Health in Buffalo, MN.

10-4-21
Receipt for consultation with Dr. Schwartz

4-8-22, 4-15-22 & 5-13-22
Receipts from Her Healing Touch Massage Therapist
For lymphatic drainage massages
Note: I only started keeping these recently.
If you need more I can see if the therapist can print them out for me.

SCHULER
SHOES

*** REPRINT *** 11/5/2021 12:52 PM

SCHULER SHOES
WAYZATA
1175 WAYZATA BLVD
WAYZATA, MN. 55391
952-345-0021

3/29/2019 10:00 AM 71/718/344108

3204927404
Mary Berns
15986 71ST St NW
South Haven, MN 55382-3872

Regular Sale by 718:Leslie
DAMASK WOS, in DENIM

SW16W-650 M/L	1	26.95
Discount		-4.04
Net Price		22.91

Subtotal:	22.91
Total:	22.91
3 - Credit Card	22.91

Visa #XXXXXXXXXXXX6101
Approval #009014

SHOES

*** REPRINT *** 11/5/2021 12:57 PM

SCHULER SHOES
342 3RD STREET NE
WAITE PARK, MN. 56387
320-253-8777

1/2/2015 05:37 PM 79/966/35049

3204927404
Mary Berns
15986 71ST St NW
South Haven, MN 55382-3872

Regular Sale
CHEVRON, in TEAL
SW7W-480 M/L M 1 24.95
Frequent Buyer Reward: FREQUENT -24.95
Net Price 0.00

Subtotal: 0.00
Total: 0.00

Items Sold: 1

FREQUENT BUYER PROGR Summary:
Dollars To Go: $493.89

THANK YOU FOR SHOPPING AT SCHULER SHOES. WE APPRECIATE RETURNS IN 30 DAYS UNWORN, BUT WE REALIZE THERE ARE EXCEPTIONS.

****

TELL US HOW WE'RE DOING. COMPLETE AN ONLINE SURVEY AND BE AUTOMATICALLY ENTERED IN A MONTHLY DRAWING FOR A FREE $50.00 SCHULER SHOES GIFT CARD! VISIT WWW.SCHULERSHOES.COM/COMMENTS

****

REFUNDS ARE IN THE FORM OF THE ORIGINAL PAYMENT.
THANK YOU.

SHOES

*** REPRINT *** 11/5/2021 12:59 PM

SCHULER SHOES
342 3RD STREET NE
WAITE PARK, MN. 56387
320-253-8777

5/2/2016 11:38 AM 79/924/5874

3204927404
Mary Berns
15986 71ST St NW
South Haven, MN 55382-3872

Promotion Code : 0478
Regular Sale by 924:Tyler
ELEVATION WOS, in OYSTER
SW4W-060 S/M M 1 24.95
Coupon: Sp Coll 2 Book Coup - SA -5.00
Frequent Buyer Reward: FREQUENT -12.50
Net Price 7.45
SHADOW DOT W, in BLACK
SW13W-900 S/M M 1 24.95
Coupon: Sp Coll 2 Book Coup - SA -5.00
Frequent Buyer Reward: FREQUENT -12.50
Net Price 7.45

Subtotal: 14.90
Total: 14.90
3 - Credit Card 14.90
Visa #XXXXXXXXXXXX9272
Approval #04211C

Items Sold: 2

* *
Orders (1), Balance Due $189.95

SCHULER
SHOES

*** REPRINT *** 11/5/2021 1:00 PM

SCHULER SHOES
342 3RD STREET NE
WAITE PARK, MN. 56387
320-253-8777

6/6/2016 03:52 PM 79/[illegible]047

3204927404
Mary Berns
15986 71ST St NW
South Haven, MN 55382-3872

Regular Sale by 794:Maggie
ETHNO GRAPHIC CREW, in BERRY

SWOSM627044 M	1	19.95
Discount		-7.55
Net Price		12.40

Regular Sale by 994:Anthony
SHADOW DOT W, in BLACK

SW13W-900 S/M M	2	49.90
Discount		-19.10
Net Price		30.80

Shadow Dot IS Compression - the Ethno Graphic Crew is not.

SCHULER
SHOES

*** REPRINT *** 11/5/2021 12:51 PM

SCHULER SHOES
MAPLE GROVE
7845 MAIN STREET NORTH
MAPLE GROVE, MN. 55369
763-494-4878

3/29/2019 10:24 AM 72/547/349880

3204927404
Mary Berns
15986 71ST St NW
South Haven, MN 55382-3872

Regular Sale by 547:Lukas
DAMASK WOS, in NAVY

SW16W-600 M/L M	1	[illegible]
Discount		-4.04
Frequent Buyer Reward: Schuler		-12.50
Net Price		10.41

CIRCULATOR SOLID W, in BLACK

SW1W-900 M/L M	1	26.95
Discount		-4.04
Frequent Buyer Reward: Schuler		-12.50
Net Price		10.41

Subtotal:	20.82
Total:	20.82
3 - Credit Card	20.82

Visa #XXXXXXXXXXXX6101
Approval #009895

amazon.com

Final Details for Order #113-2876922-7141016

Print this page for your records.

Order Placed: July 11, 2021
Amazon.com order number: 113-2876922-7141016
Order Total: $38.52

Shipped on July 12, 2021

Items Ordered	Price
1 of: *SIGVARIS Unisex Performance Compression Running Sleeve 412V 20-30mmHg* Sold by: BODAWAY (seller profile) Condition: New	$35.96

Shipping Address:
Mary J Berns
15986 71st ST NW
South Haven, MN 55382
United States

Shipping Speed:
FREE Prime Delivery

Payment information

Payment Method:
Visa | Last digits: 1622

Billing address
Mary J Berns
15986 71st ST NW
South Haven, MN 55382
United States

Item(s) Subtotal:	$35.96
Shipping & Handling:	$0.00

Total before tax:	$35.96
Estimated tax to be collected:	$2.56

Grand Total:	**$38.52**

Credit Card transactions

Visa ending in 1622: July 12, 2021: $38.52

To view the status of your order, return to Order Summary.

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amazon.com

Final Details for Order #113-0912974-8856266

Print this page for your records.

Order Placed: July 11, 2021
Amazon.com order number: 113-0912974-8856266
Order Total: $14.20

Shipped on July 12, 2021

Items Ordered	Price
1 of: *Physix Gear Compression Socks for Men & Women 20-30 mmHg Graduated Athletic for Running Nurses Shin Splints Flight Travel & Maternity Pregnancy - Boos* Sold by: Physix Gear Sport (seller profile) Condition: New	$14.20

Shipping Address:
Mary J Berns
15986 71st ST NW
South Haven, MN 55382
United States

Shipping Speed:
FREE Prime Delivery

Payment information

Payment Method:
Visa | Last digits: 1622

Billing address
Mary J Berns
15986 71st ST NW
South Haven, MN 55382
United States

Item(s) Subtotal:	$14.20
Shipping & Handling:	$0.00

Total before tax:	$14.20
Estimated tax to be collected:	$0.00

Grand Total:	**$14.20**

Credit Card transactions

Visa ending in 1622: July 12, 2021: $14.20

To view the status of your order, return to Order Summary.

Conditions of Use | Privacy Notice © 1996-2021, Amazon.com, Inc. or its affiliates

RECEIPT OF PAYMENT

Patient: **Mary Berns**

Doctor:

Total:	$0.00
Additional Payments:	**$0.00**
Balance Due:	$0.00

Payment	Reference #	Payment Amount
2021-07-02 Payment - Visa	03083I	$500.00

Notes: *Paid Consultation. Dr. Herbst.*

TOTAL
LIPEDEMA
CARE

→website→
10 steps Insurance

Manual Therapy Prescription

Patient: Mary Berns
Date of Birth: 1958-09-06
Patient Address: , Central Minnesota, MN, 0
Patient Phone: 320-492-7404

EVALUATE AND TREAT

Physical Therapy / Occupational Therapy

1. This is a prescription for complete decongestive therapy to include manual lymph drainage of the arms, chest, abdomen, pelvis and legs, wrapping as needed, skin care and kinesiotape as needed.

2. Please use deep techniques to reduce the fibrotic structure in the tissue, breaking down fibrosis and scar to improve flow.

3. This patient may not have the same amount of fluid in the tissue as someone with lymphedema.

4.Please decompress all lymph nodes and assure flow.

5.Teach self MLD and deep tissue techniques.

6. Consider for a sequential pneumatic compression pump.

Please make recommendations for compression garments for the arms, chest, legs and fax to me at 310-747-5908. Compression should be around 25 mm Hg, no more than 30mHg.

ICD-10:
Pain in the right leg M79.604
Pain in the left leg M79.605
Lipedema R 60.9
Lymphedema secondary to lipedema I89.0
Chronic pain G 89.4

CPT: 97002 or 97004 x1
(97535, 97140, 97110)x25

Electronically signed by Karen L. Herbst, MD, PhD Monday, August 2nd, 2021
Karen L. Herbst, MD, PC
Board-Certified Endocrinology

TOTAL
LIPEDEMA
CARE

Venous Duplex Ultrasound

Date: Monday, August 2nd, 2021
RE: Berns , Mary
[redacted]
Patient Phone: 320-492-7404

ORDER: Venous Duplex Ultrasound of Bilateral Legs

Evaluate the greater and lesser veins of the legs for venous insufficiency and varicosity.

This test must be performed in a vascular lab.

ICD-10
I87.2 Venous Insufficiency
R60.9 Lipedema
M79. 605 Pain in the left leg
M79.604 Pain in the right leg

Please fax results

Electronically signed by Karen L. Herbst, MD, PhD Monday, August 2nd, 2021
Karen L. Herbst, MD, PC
NPI: 1114977840
240 South La Cienega, Suite 200, Beverly Hills CA, 90211
630 South Craycroft Road, Tucson, AZ, 85711
Phone: 310-882-5454
Fax: 310-747-5908

I HAd an ultra sound done @ stellis Health in Buffalo MN by Dr. Lawrence @ End of 2021

Order

durable medical equipment (DME) [87416] (Order 1196094373)

Order Information

Date and Time
8/19/2021 4:43 PM

Department
Anna Fam Gen Prac Amc

Outpatient Medication Detail

	Disp	Refills	Start	End	DAW
durable medical equipment (DME)	1 Each	0	8/19/2021		--

Sig: pantyhose to cover from mid trunk to toes or capris and knee highs to complete same coverage of B lower extremity. Compression of 20-30, not to exceed 30, ideally 25 mmHG Also need B arm sleeves. Compression Class 1. Diagnosis lipedema
Class: Print

durable medical equipment (DME) [1196094373]

Dose, Route, Frequency: As Directed
Dispense Quantity: 1 Each Refills: 0

Sig: pantyhose to cover from mid trunk to toes or capris and knee highs to complete same coverage of B lower extremity. Compression of 20-30, not to exceed 30, ideally 25 mmHG Also need B arm sleeves. Compression Class 1. Diagnosis lipedema

Start Date: 08/19/21 End Date: --
Written Date: 08/19/21 Expiration Date: 08/19/22

Diagnosis Association: Lipedema (R60.9)

Providers

Authorizing Provider: Oman, Victoria Lee, MD NPI: 1952487902 DEA #: BO5745522
Ordering User: Oman, Victoria Lee, MD

Pharmacy

Thrifty White Pharmacy #787 - Annandale, MN - 246 Elm Street W
246 Elm Street W, Annandale MN 55302
Phone: 320-274-3062 Fax: 877-838-2299
DEA #: --

Medication Detail

	Quantity	Refills	Start	End
durable medical equipment (DME)	1 Each	0	8/19/2021	

Sig: pantyhose to cover from mid trunk to toes or capris and knee highs to complete same coverage of B lower extremity. Compression of 20-30, not to exceed 30, ideally 25 mmHG Also need B arm sleeves. Compression Class 1. Diagnosis lipedema
Route: (none)
Class: Print

Provider Information

Ordering User

Authorizing Provider

Ordering User
Oman, Victoria Lee, MD
PCP
Oman, Victoria Lee, MD

Authorizing Provider
Oman, Victoria Lee, MD

Associated Diagnoses

Lipedema **[R60.9]** - Primary

Detailed Information

Priority and Order Details

Encounter

View Encounter

Packing Slip

Tactile MEDICAL®

Tactile Systems Technology, Inc.

3701 Wayzata Blvd.
Suite 300
Minneapolis MN 55416
United States

Ship To
Mary Berns
15986 71st St Nw
South Haven MN 55382-3872
United States

Date: 08/24/2021

Order #: ORD665195

Sale Order Type: Pre-Determination

Bill To: BCBS Anthem OH

Order Qty	Ship Qty	Item #	Item Description	Lot/Serial Number, Bin
1	1	**PD32-G3**	Controller, PD32-G3	321C007102, FG-G3OUS
1	1	**3L-FL-MD-L**	Full Leg Medium Left - Gray Assembly PD32-G3	662908, FG-012-P-01
1	1	**3L-FL-MD-R**	Full Leg Medium Right - Gray Assembly PD32-G3	655155, FG-012-O-01
1	1	**3A-TR-MD-A**	Medium Trunk - Gray Assembly PD32-G3	657561, FG-012-L-01
1	1	**3U-AS-S3-L**	Size 3 Chest - Short Arm Left - Gray Assembly PD32-G3	21140, FG-012-R-03
1	1	**3U-AS-S3-R**	Size 3 Chest - Short Arm Right - Gray Assembly PD32-G3	21119, FG-012-R-04
1	1	**500420-000-00**	Flexitouch Plus User Guide PD32-G3	
1	1	**300017-000-00**	Assembly, Power Adapter, Labeled	210105, FG-OTHER
1	1	**300050-000-00**	Bilateral Port Adapter PD32-G3	B20-024992, FG-BPA
1	1	**300420-000-00**	Packaging Kit PD32-G3	
1	1	**500037-300-00**	Flexitouch DVD PD32-G3	
1	1	**500747-000-00**	Patient Welcome Packet	

Customer Service Notes

PT452908

ORD665195

FLEXITOUCH PLUS™

YOUR PRESCRIBED TREATMENT

For your reference, the following are your prescribed settings:

PATIENT NAME	DATE
Mary Berns	8/24/2021

Bilateral Upper Extremity 60 min

* Primary Treatment: Full Arm and Core (U1)
  Pressure: Normal
  Frequency: One extremity per day, alternating extremities

Bilateral Lower Extremity

* Primary Treatment: Full Leg and Core (L1) 60 min
  Pressure: Normal
  Frequency: Daily simultaneous bilateral lower extremity treatment
- Supplemental Treatment: Full Leg Plus (L4) 45 min
  Pressure: Normal
  Frequency: As Needed

3-6 hrs between treatments

Prior to beginning treatment, please verify that the program on your controller matches your prescribed treatment.
Refer to the User Guide for instructions on how to change your treatment program.
If you have additional questions, please contact Tactile Medical Product Support at 877.793.3362.

Tactile Medical
3701 Wayzata Blvd, Suite 300
Minneapolis, MN 55416 USA
Toll Free Tel: 833.382.2845 (833.3TACTILE)
Toll Free Fax: 866.435.3949
Hours: 7 a.m. to 7 p.m. CT, Monday–Friday
tactilemedical.com

Tactile MEDICAL®

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PT452908

Reliable MEDICAL

1630 Anderson Ave Suite #200,Buffalo, MN 55313-2947, Phone: (763) 684-1778

DELIVERY TICKET

Print/Reprint Date 12/28/2021 9:31:37 AM
Sales Order 513983
Customer ID 98144
Acct Number
Doc ID 1|2889|1775739

Customer BERNS , MARY J

Bill to 15986 71ST ST NW
SOUTH HAVEN, MN 55382-3872
(320) 492-7404

Deliver to 15986 71ST ST NW
SOUTH HAVEN, MN 55382-3872
Phone: (320) 492-7404
Mobile:

Insurance BCBS OF MINNESOTA

Comments or Special Instructions

RAC ON FILE FOR COMPRESSION GARMENTS 8-20-21

HIPAA Signature on file Yes

Delivery Date	CSR	Branch	Shipping Method	Delivery Technician
11/30/2021	Kelleen	Buffalo	WILL CALL	

Qty	Bill Qty	Type	Bin	Item	Charge	Allow	Tax	Co-Pay
Warehouse				Buffalo				
1	1	Purchase		98144-SL-LT / CUSTOM COMPRESSION SLEEVE LEFT MEDI USA / 98144-SL-LT Unit of Measure: EA HCPC A6549	$213.38	$117.36	$0.00	$23.47
1	1	Purchase		98144-SL-RT / CUSTOM COMPRESSION SLEEVE RIGHT MEDI USA / 98144-SL-RT Unit of Measure: EA HCPC A6549	$213.38	$117.36	$0.00	$23.47
				TOTAL	$426.76	$234.72	$0.00	$46.94

Non-returnable Product

A charge of 18% APR plus any legal and collection fees will be added to all overdue accounts. Copay is only an estimate, your insurance will dictate the final amount due. I understand that I will be responsible for payment of my deductible, co-insurance, and any other portion of charges not paid by my insurance, including services or products ineligible under my benefit contract. I authorize the release of any medical or other information necessary to process this claim. I authorize payment of medical benefits to RMS. I understand my insurance may be billed for these services and my total responsibility will be determined upon receipt of my insurance processing. I further understand that I am responsible to communicate insurance changes, coordination of benefits, Home Health agencies assisting in my home or any hospital stay. Failure to communicate these events to Reliable Medical will result in financial responsibility to me for any product or service not covered for these reasons. Reliable Medical Supply honors all manufacturer warranties of the above equipment to all beneficiaries under applicable law. Reliable Medical Supply will repair or replace based on manufacturer warranty. I have been properly instructed on the safety precautions and proper usage of the above equipment and given the owner's manual, warranty and safety info if available from the manufacture. I have received a copy of CMS supplier standards. HIPAA Privacy standards available upon request. I was given the option to Rent or Purchase routinely purchased/inexpensive items. By signing below I understand and acknowledge these statements and I have received a copy of this receipt. Check ID: _____

1-4-22

Thank You for Your Business !!!

Reliable MEDICAL

1630 Anderson Ave Suite #200,Buffalo, MN 55313-2947, Phone: (763) 684-1778

DELIVERY TICKET

Print/Reprint Date 9/22/2021 12:10:57 PM
Sales Order 498034
Customer ID 98144
Acct Number
Doc ID 1|2889|1673794

Customer BERNS , MARY J

Bill to 15986 71ST ST NW
SOUTH HAVEN, MN 55382-3872
(320) 492-7404

Deliver to 15986 71ST ST NW
SOUTH HAVEN, MN 55382-3872
Phone: (320) 492-7404
Mobile:

Insurance BCBS OF MINNESOTA

Comments or Special Instructions

RAC ON FILE FOR COMPRESSION GARMENTS 8-20-21

HIPAA Signature on file Yes

Delivery Date	CSR	Branch	Shipping Method	Delivery Technician
8/25/2021	Kelleen	Buffalo	WILL CALL	

Qty	Bill Qty	Type	Bin	Item	Charge	Allow	Tax	Co-Pay
Warehouse				Buffalo				
2	2	Purchase		2Y01713 / SLEEVE MEDIVEN HARMONY 20-30 EXTRA WIDE CARAMEL MEDI USA / 2Y01713 Unit of Measure: EA HCPC L8010	$168.00	$96.22	$0.00	$19.24
				TOTAL	$168.00	$96.22	$0.00	$19.24

Non-returnable Product

A charge of 18% APR plus any legal and collection fees will be added to all overdue accounts. Copay is only an estimate, your insurance will dictate the final amount due. I understand that I will be responsible for payment of my deductible, co-insurance, and any other portion of charges not paid by my insurance, including services or products ineligible under my benefit contract. I authorize the release of any medical or other information necessary to process this claim. I authorize payment of medical benefits to RMS. I understand my insurance may be billed for these services and my total responsibility will be determined upon receipt of my insurance processing. I further understand that I am responsible to communicate insurance changes, coordination of benefits, Home Health agencies assisting in my home or any hospital stay. Failure to communicate these events to Reliable Medical will result in financial responsibility to me for any product or service not covered for these reasons. Reliable Medical Supply honors all manufacturer warranties of the above equipment to all beneficiaries under applicable law. Reliable Medical Supply will repair or replace based on manufacturer warranty. I have been properly instructed on the safety precautions and proper usage of the above equipment and given the owner's manual, warranty and safety info if available from the manufacture. I have received a copy of CMS supplier standards. HIPAA Privacy standards available upon request. I was given the option to Rent or Purchase routinely purchased/inexpensive items. By signing below I understand and acknowledge these statements and I have received a copy of this receipt. Check ID: _____

Thank You for Your Business !!!

1|2889|1673794

Sales Order 498034
Customer BERNS , MARY J
Customer ID 98144

Customer Copy

Reliable MEDICAL

1630 Anderson Ave Suite #200,Buffalo, MN 55313-2947, Phone: (763) 684-1778

DELIVERY TICKET

Print/Reprint Date 9/27/2021 2:31:28 PM
Sales Order 500976
Customer ID 98144
Acct Number
Doc ID 1|2889|1668942

Customer BERNS , MARY J

Bill to 15986 71ST ST NW
SOUTH HAVEN, MN 55382-3872
(320) 492-7404

Deliver to 15986 71ST ST NW
SOUTH HAVEN, MN 55382-3872
Phone: (320) 492-7404
Mobile:

Insurance BCBS OF MINNESOTA

Comments or Special Instructions
RAC ON FILE FOR COMPRESSION GARMENTS 8-20-21

HIPAA Signature on file Yes

Delivery Date	CSR	Branch	Shipping Method	Delivery Technician
9/14/2021	Kelleen	Buffalo	WILL CALL	

Qty	Bill Qty	Type	Bin	Item	Charge	Allow	Tax	Co-Pay
Warehouse				Buffalo				
1	1	Purchase		98144-KN-LT / STOCKING CUSTOM KNEE MEDIVEN MONDI BLACK LEFT MEDI USA / 98144-KN-LT Unit of Measure: EA HCPC A6549	$230.28	$126.65	$0.00	$25.33
1	1	Purchase		98144-KN-RT / STOCKING CUSTOM KNEE MEDIVEN MONDI BLACK RIGHT MEDI USA / 98144-KN-RT Unit of Measure: EA HCPC A6549	$230.28	$126.65	$0.00	$25.33
1	1	Purchase		98144-PTY / STOCKING CUSTOM WAIST HIGH LEGGINGS BLACK MEDI USA / 98144-PTY Unit of Measure: EA HCPC A6549	$974.98	$644.44	$0.00	$128.89
				TOTAL	$1,435.54	$897.74	$0.00	$179.55

Non-returnable Product

A charge of 18% APR plus any legal and collection fees will be added to all overdue accounts. Copay is only an estimate, your insurance will dictate the final amount due. I understand that I will be responsible for payment of my deductible, co-insurance, and any other portion of charges not paid by my insurance, including services or products ineligible under my benefit contract. I authorize the release of any medical or other information necessary to process this claim. I authorize payment of medical benefits to RMS. I understand my insurance may be billed for these services and my total responsibility will be determined upon receipt of my insurance processing. I further understand that I am responsible to communicate insurance changes, coordination of benefits, Home Health agencies assisting in my home or any hospital stay. Failure to communicate these events to Reliable Medical will result in financial responsibility to me for any product or service not covered for these reasons. Reliable Medical Supply honors all manufacturer warranties of the above equipment to all beneficiaries under applicable law. Reliable Medical Supply will repair or replace based on manufacturer warranty. I have been properly instructed on the safety precautions and proper usage of the above equipment and given the owner's manual, warranty and safety info if available from the manufacture. I have received a copy of CMS supplier standards. HIPAA Privacy standards available upon request. I was given the option to Rent or Purchase routinely purchased/inexpensive items. By signing below I understand and acknowledge these statements and I have received a copy of this receipt. Check ID: _____

Thank You for Your Business !!!

Treatment Plan Checklist: Outpatient Therapy

Welcome to Courage Kenny Outpatient Therapy. This checklist will help you have a smooth transition to your active life. Please bring your folder and exercise sheets to each appointment.

- ☒ Physical Therapy services will be provided 2 time(s) each week for 8 weeks.
- ☐ Occupational Therapy services will be provided _____ time(s) each week for _____ weeks.
- ☐ Speech Language services will be provided _____ time(s) each week for _____ weeks.

- ☒ I understand my medical condition and why I need to participate in therapy.
- ☒ I understand my therapy treatment plan.
- ☒ The therapist and I talked about my therapy goals.
- ☒ Activities that will help my condition include:
  - ☐ Seated Exercises
  - ☐ _____
  - ☐ _____
  - ☐ PT - start garment order & pump order
- ☒ Activities that I will avoid include:
  - ☐ _____
  - ☐ _____
  - ☐ _____
  - ☐ _____
- ☒ I know how to contact my therapist. I understand that it is important to call him or her if I have any questions or concerns.

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pt-ah-14935 (11/14)

Phone: 763-684-3888

Thank you for choosing Courage Kenny Rehabilitation Institute. We look forward to working with you to help you feel better or reach a health goal.

If you have questions about services being covered, call your insurance company's customer service department. The phone number usually is found on the back of your insurance card.

Here are some important things to know:

- Courage Kenny Rehabilitation Institute and Courage Kenny Kids – Buffalo is an outpatient department of Buffalo Hospital.
- Your service will be billed as an "outpatient service" using the hospital's billing number.
- Hospital billing rates and deductibles will be applied to your bill.
- If Buffalo Hospital is listed in your provider manual, then Courage Kenny Rehabilitation Institute and Courage Kenny Kids – Buffalo is in your provider network.
- Below is a summary of your benefits for therapy services at our department. This estimate is based on the insurance information you gave us. We are providing this as a courtesy so you are able to make an informed decision about the cost of your care. It is ***your responsibility*** to confirm this estimate with your insurance company.

Your Primary Insurance Name: Blue Cross of MI

Co-Pay: Ø per visit / per appointment Deductible: $7000.00

Co-insurance: 20 percent of total charges Out Of Pocket: $7350.00

Visit Limit(s): _____

- If you are not able to attend an appointment, **please call us at least 24 hours in advance.**
- If you miss **TWO** scheduled appointments, we may cancel the rest of your appointments. You may need to get a **NEW** doctor's order before we reschedule.

Please talk with your provider if you have any questions or concerns.
We want to help you succeed with your health goals. Thank you.

Lori Froehling, Director of Therapies
Courage Kenny Rehabilitation Institute

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RECEIPT OF PAYMENT

Patient: **Mary Berns**

Doctor: **Jaime Schwartz**

Total:	$0.00
Additional Payments:	**$250.00**
Balance Due:	$-250.00

Payment		Reference #	Payment Amount
2021-10-04	Payment - Visa	03665I	$250.00

Notes: *Dr. Schwartz Consultation fee.*

Her Healing Touch
13061 45th Street NW
Annandale, MN 55302

Invoice

DATE	INVOICE #
4/8/2022	5445

BILL TO	SHIP TO
Mary Berns 15986 - 71st Street NW South Haven, MN 55382	

DUE DATE	P.O. NUMBER
4/8/2022	

ITEM	DESCRIPTION	QTY	RATE	AMOUNT
Lymphatic Drainage Massage	90 minute Detoxifying Lymphatic Drainage Massage	1	90.00	90.00T

Happy Easter!

Subtotal	90.00
7.375% Tax	6.64
Total	96.64

Her Healing Touch
13061 45th Street NW
Annandale, MN 55302

Invoice

DATE	INVOICE #
4/15/2022	5456

BILL TO	SHIP TO
Mary Berns 15986 - 71st Street NW South Haven, MN 55382	

DUE DATE	P.O. NUMBER
4/15/2022	

ITEM	DESCRIPTION	QTY	RATE	AMOUNT
Lymphatic Drainage Massage	90 minute Detoxifying Lymphatic Drainage Massage	1	90.00	90.00T

Happy Easter!

Subtotal	90.00
7.375% Tax	6.64
Total	96.64

Her Healing Touch
13061 45th Street NW
Annandale, MN 55302

Invoice

DATE	INVOICE #
5/13/2022	5501

BILL TO	SHIP TO
Mary Berns 15986 - 71st Street NW South Haven, MN 55382	

DUE DATE	P.O. NUMBER
5/13/2022	

ITEM	DESCRIPTION	QTY	RATE	AMOUNT
Lymphatic Drainage Massage	90 minute Detoxifying Lymphatic Drainage Massage	1	90.00	90.00T

Enjoy Spring!	Subtotal	90.00
	7.375% Tax	6.64
	Total	96.64

Total Lipedema Care
Dr. Jaime Schwartz
240 S. La Cienega Blvd.
Suite 200
Beverly Hills, CA 90211

RE: Mary Berns DOB: 9-6-1958

To Whom It May Concern:

I am writing on behalf of Mary Berns for coverage of medically necessary lipedema surgery. Ms. Berns has a chronic progressive debilitating disorder called ***Lipedema.*** This condition is transmitted genetically as an autosomal dominant pattern disease.

Ms. Berns has diseased lipedema tissue accumulation in her thighs, legs, ankles arms, trunk and buttocks. My approach is to eradicate as much of the diseased tissue as is safely possible per the attached **Surgical Plan** using a staged process involving 4 surgeries. In early stages, lipedema can be present on the legs, hips, and buttocks and 80% of women have it on their arms. Lipedema, in later stages, can also be present in the lower abdomen or other parts of the body and can negatively interact with obesity. Lipedema surgery includes liposuction of the diseased tissue, manual removal of nodules, and excision of excess skin.

There are published guidelines for diagnosing lipedema and an International Consensus Agreement on diagnosis in 2019. Diagnosis is by physical exam. S1 Guidelines J Dtsch Dermatol Ges 2017 Jul;15(7):758-767; International Consensus on the Prevention of Progression of Lipedema. https://www.ncbi.nlm.nih.gov/pubmed/3135643_3

Although there is variability among patients, clinicians look for the following:

- Onset at puberty, pregnancy, and menopause-progressive with age
- The affected limbs feel tight and heavy (especially at end of day even with elevation)
- Increase in adipose tissue usually starting in legs
- Reduced ambulation, decreased social activity
- Pain to the touch or pressure
- Easy bruising
- Hands and feet not affected
- Cuffs or bulges around joints (not in Type 1 or Type II Lipedema)
- Negative Stemmer sign (not in late-stage lipedema)
- Palpable spheroids in lipedema fat

In 2015, Dr. Peled, who is a UCSF faculty member, in the journal article *Lipedema: diagnostic and management challenges. Int. Women's Health, 2016*; 8: 389–395.) provided the attached diagnostic workup diagram which focuses on the clinical exams with diagnostics like CT, MRI , and lymphangiography only in questionable situations.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4986968/

As documented in my attached notes, Ms. Berns demonstrates most, if not all, of lipedema diagnostic signs. Note, per the International Consensus, a waist-height and waist-hip ratio are not criteria for diagnosis since, as it progresses, lipedema can occur in other areas like the trunk and arms. Non-pitting edema also is present in early stages of lipedema but can be unreliable because secondary lymphedema is commo/n as the disease progresses.

Ms. Berns has tried to manage this condition through conservative measures such as diet, exercise, compression garments and manual lymphatic drainage. Ms. Berns's functioning in her everyday life is impacted by lipedema.

Reduced caloric intake, physical activity, and even bariatric surgery do not reduce the abnormal subcutaneous lipedema tissue which likely results from the growth of a brown stem cell population with lymphatic dysfunction in lipedema. *Lipedema, a Frequently Unrecognized Problem*, Fonder & Loveless et al., Journal of the American Academy of Dermatology, 2007, 57(2), S1-S3. Thus, lipedema tissue must be surgically removed.

Lipedema is a chronic, progressive disease, which if left untreated, can lead to multiple secondary and life-threatening health problems. These include circulatory problems (due to pressure on lymph vessels); a disruption of the lymphatic system causing dangerous lymphedema; joint problems in the spine and lower extremities; and a reduction in mobility leading to impaired quality of living. *Lipedema: An Overview of its Clinical Manifestations, Diagnosis and Treatment of the Disproportional Fatty Deposition Syndrome*, Forner-Cordero & Szolnoky, Clin Obes 2012 Jun;2(3-4): 86-95.

The excess tissue fluid weakens nearby structures leading to the development of joint pains; with progression of lipedema, arthritis develops. *Lipedema, a Barely Known Disease*; Wenczl E, Daroczy J. Orv Hetil. 2008;149:2121–7. Capillary fragility, ecchymosis, hematomas, and venous varicosities are common. *Syndrome of Lower Limb Volume Enlargement in Varicosity*; Tsukanov Angiol Sosud Khir. 2007;13:85–91.

The only successful treatment for Lipedema is lipedema surgery. This is not a cosmetic procedure but a medically necessary surgery. I have been treating lipedema patients for over 7 years and have successfully surgically performed 1000 lipedema surgical procedures on patients with lipedema. Following liposuction surgery, patients can resume activities, return to work, and avoid the cascade of medical and surgical issues that result from Lipedema. Ms. Berns will be prescribed compression following surgery to assist in her healing. Multiple studies demonstrate the long-term effectiveness of lipedema surgery to relieve the pain, swelling, and immobility caused by lipedema. Also, see links to Aetna, Anthem and Premera Blue Cross plans coverage policy on lipedema surgery that describes

the diagnoses and treatment in additional detail. Highmark, Excellus, Care1st, and other smaller plans also cover lipedema.

http://www.aetna.com/cpb/medical/data/1_99/0031.html
https://www.anthem.com/dam/medpolicies/abc/active/policies/mp_pw_a050277.html
https://www.premera.com/medicalpolicies/7.01.567.pdf

Please contact me if you require further information.

Thank you,

Jaime Schwartz, MD
Total Lipedema Care
Tax ID: 85-2749142
NPI # 1003417833

ASC Name: TLC Surgical Center
240 S La Cienega Bl # 210
Beverly Hills CA 90211
NPI: 1104469105
FED TAX ID # 83-3724406

SURGICAL PLAN
Mary Berns

DOB: 9-6-1958

Diagnosis Code 82.0, R60.9, M79.604, M79.605, E88.2

Stage 1:
Bi-lateral lower extremity Anterior
CPT Code 15879 Modifiers -22, -50

Stage 2:
Lipedema reduction surgery trunk (abdomen)
CPT Code 15877-22
Excision excessive skin and tissue abdomen
CPT Code 15839-22

Stage 3:
Bi-lateral lower extremity posterior
CPT Code 15879 Modifiers -22, -50
Lipedema reduction surgery trunk (buttocks, hip shelf) RT
CPT Code 15877-22
Lipedema reduction surgery trunk (buttocks, hip shelf) LT
CPT Code 15877-22

Stage 4:
Bi-lateral upper extremity
CPT Code 15878 Modifiers -22, -50

Note that the surgical plan can change depending on how the patient responds to surgery. It will take approximately 12 months to complete this plan, so we ask for approval to reflect that time period.

Jaime Schwartz, MD
NPI: 1003417833
FED TAX ID: 85-2749142
Address: 240 S. LA Cienega Bl # 200 Beverly Hills CA 90211

TLC Surgical Center
NPI: 1104469105
FED TAX ID: 83-3724406
Address: 240 S. La Cienega Bl # 210 Beverly Hills CA 90211

EFFECTIVENESS OF LIPEDEMA SURGERY

There are approximately 1,000 lipedema surgeries performed every year in the United States. They are essential to improving function and reducing pain for patients suffering from this disease.

An August 2014 review of the forty-seven publications from 1982 to 2014, found agreement of the forty-seven publications from 1982 to 2014, found agreement that lipectomy is an applicable and effective treatment for chronic medical conditions such as lipedema. *Liposuction: A Surgical Tool to Improve the Quality of Life after Morbid Medical Conditions: Review of Literature,* Elkhatib HA 2014 Anaplastology 3:133. Lipectomy for lipedema has a definite positive and long-lasting effect. *Liposuction is an Effective Treatment for Lipedema-Results of a Study with 25 Patients,* Rapprich. Stefan, MD et al, Journal of the German Soc of Derm: Vol 9, (2012); p 33-40. (the majority of patients no longer require prolonged further therapy. Reduction of pain and drastic improvement in the patient's quality of life is noted in all patients.)

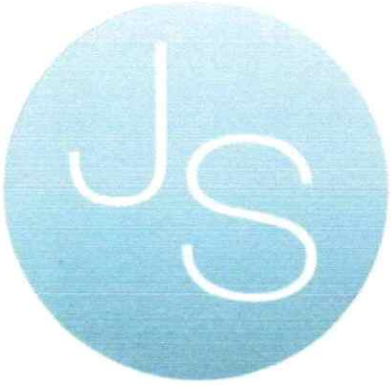
Liposuction has ceased to define a specific procedure and became synonymous with a surgical technique or tool the same as the surgical knife, laser, electrocautery, suture material, or even wound-dressing products. *Functional and Therapeutic Indications of Liposuction: Personal Experience and Review of the Literature,* Bishara Atiyeh 2015 Annals of Plastic Surgery 75(2). Liposuction results in fewer complications such as hematoma formation, skin necrosis, wound infection, and dehiscence with delayed healing and prolonged hospital stay. *Aesthetic or Functional Indications for Liposuction,* Michel Costagliola, MD et al, *Aesthetic Surgery Journal,* Volume 33, Issue 8, November 2013, Pages 1212–1213. In other words, liposuction is to surgical lipectomy what endoscopic cholecystectomy is to open surgical cholecystectomy.

Lipedema surgery decreases the mechanical stress on lymphatic vessels sufficiently to allow for the cessation of compression garment use beyond the initial postoperative period. *Long-term Outcome After Surgical Treatment of Lipedema,* Anne Warren Peled, MD, et al, Annals of Plastic Surgery Volume 68, Number 3, March 2012.

The international expert in lipedema, Dr. Josef Stutz, has studied the effects on the health of his patients for many years. The effects in a patient's body from the unusual gait from lipedema fat storage around the knees causes multiple joint complications. Stutz concluded that lipectomy is the only treatment that can remove the mechanical impediment to normal gait and prevent joint deterioration. *Liposuction of Lipedema for Prevention of Later Joint Complications*; Stutz, Josef] MD, Vasomed, Vol 23 (2011).

Wollina and colleagues reported on 111 patients mostly with advanced lipedema treated by this technique in our center between 2007 and 2018. The median pain level before treatment was 7.8 and 2.2 at the end of the treatment. An improvement of mobility could be achieved in all patients. Bruising was also reduced. Serious adverse events were observed in 1.2% of procedures, the infection rate was 0% and the bleeding rate was 0.3%. Liposuction is an effective treatment for painful lipedema. Dermatol Ther. 2019 Mar: 32(2) In another study of 209 patients, quality of life increased significantly after surgery with a reduction of pain and swelling and decreased tendency to easy bruising. Bauer and colleagues, New Insights on Lipedema: The Enigmatic Disease of the Peripheral Fat. Plast. Recontr Surg. 2019 Dec. 144(6)

Thus, lipedema surgery is safe, effective, and the standard of care for many, many years. Indeed, the International Consensus Conference on Lipedema issued conclusions that although lipedema has been underdiagnosed in places like the United States, multiple studies from Germany have reported long-term benefits for as long as eight years after lipedema surgery. https://www.ncbi.nlm.nih.gov/pubmed/3135643_3



Mary Berns -> #1136978 New Patient Lipedema Consultation - Dr. Schwartz
Patient #: 8583 • DOB: 1958-09-06

Patient:	Mary Berns	**Type:**	New Patient Consult Notes
Document #:	1136978	**Document By:**	Jane E.
Subject:	New Patient Lipedema Consultation - Dr. Schwartz	**Document Date:**	11/04/2021

Dr. Schwartz- New Patient Visit

Patient Name: Berns , Mary
DOB: 1958-09-06
Age: 63 **Height:** 5'7" **Current Weight:** 214
BMI: 33.59 **Highest Weight**: **When**:
Medical History: Hashimotos, sinus infections/post nasal drip, osteoporosis, obesity, arthritis, acid reflux
Surgical History: Torn meniscus, Broken ankle (1995), Breast tissue removed under left arm
Medications: Omeprazole, Levothroxine and Liothyroxine
[Medications were reviewed]
Social History: 0 Packs per day. If quit, when N/A. Recreational Drugs: No
Allergies: Penicillin, recent hives from cephalexin and
Women: Period**:** 15 Gravita: 3 Para: 3 Menopause: 42 Last Mammogram: 2019
Family History: None
Occupation:
Other Information:

Referring Physician: Patint has provider for hormone testing and treatment. Her name is Carol Brinkman.
Her primary care doctor that I go to for illnesses and preventative care is Dr. Omann at Allina Clinic in Annandale, MN.

Phone number: Carol Brinkman: 320-227-5000
Dr. Omann: 320-274-3744
Fax number: Carol Brinkman fax :320-227-5025
Allina Clinic fax: 320-274-8194

Pharmacy Name: Thrifty White Pharmacy
246 Elm Street West, Annandale, MN 55302
Phone: 320-274-3062. Fax: 320-274-6546

Patient Phone: 320-492-7404
Patient Email: Mary.berns@gmail.com

CC: The patient is seeking a consultation for diagnosis and treatment of lipedema by Dr. Schwartz.

History of Present Illness
Mary Berns is a 63 year old woman who presents for care of lipedema. The patient's medical and surgical histories are not significant. She has a prior diagnosis of lipedema by Dr. Karen Herbst in August 2021. Patient is new to lipedema.

Dr. Herbst agrees with lipedema reduction surgery.

The patient reports her daughter also has lipedema and has had surgery in Twin Cities (doctor flew in). Patient has done MLD for six weeks and wears compression, she is unsure of whether or not it is helping. Patient experiences swelling in her ankles. Her legs and inner knees are her biggest area of concern. They feel like tree trunks and inhibit her movement. Patient did a venous ultrasound yesterday.

Patient would also like breast reduction.

Previous Diagnosis with Lipedema: Yes
By Whom: Dr. Herbst, August 2021

Lymphedema: Lipolymphedema diagnosed by Dr. Herbst

Onset:

Swelling worse during summer when standing?

Areas with lipedema are unaffected by caloric restriction?

Limbs tight and heavy especially at end of day and even with elevation?

Reduced ability to get around (ambulation)?

Any decrease in social activity?

Previous Conservative treatments: Compression, MLD

PT/MLD Name:

Previous Surgical Treatment: None

Diet: Keto, whole foods

Exercise: It is difficult for her to exercise, she walks when she can and uses a stationary bike

Pain
Average Daily Pain Score (1-10): 5
Worst Daily Pain Score (1-10): 5
Lowest Daily Pain Score (1-10): 5

Conservative Therapy
Compression Garments: Yes
Sequential Pneumatic Compression Pump: Yes
Manual Lymphatic Drainage Therapy: Yes
Deep Tissue Therapy: No

Weight
Any history of weight gain:
Any history of weight loss:

Ever use of the following meds
Phentermine: No
Dextroamphetamine: No
Adderall: No
Metformin: No

PHYSICAL EXAM
Weight: 214 Height: 5'7" BMI: 33.59

General: Woman in no apparent distress
Gait:
HEENT: PERRLA; EOMI; does not wear glasses
Neck: No thyroid enlargement or nodules
Heart: Regular rate and rhythm; no murmurs, rubs or gallops
Lungs: Clear to auscultation
Abdomen:
Vascular: Stemmer negative on the hands and feet; No pitting edema; no evidence of acrocyanosis

LOOSE CONNECTIVE (FAT) TISSUE EXAM

Arms
Full and tender: Yes
Wrist cuff: No
Hand fat base thumb: No
Hand fat between MCPs: No
Stemmer hand: Negative

Abdomen
Nodules palpated under the umbilicus: Yes
Tender: Yes
Nodules palpated mons pubis: Yes
Tender: Yes
Panniculus: Moderate

Legs
Mattress pattern thigh tissue: Yes
Fat overhanging knee: Yes
Lobules: Yes
Striae: Yes
Ankle cuff: Yes
Stovepipe legs: No
Enlargement around lateral malleoli: Yes
Enlargement around medial malleoli: Yes
Enlargement around Achilles: Yes
Enlargement on top of foot: Yes
Stemmer foot: Negative

Cherry angiomas: No
Bruising: Yes
Pitting edema: Yes
Fibrotic Tissue: Yes
Heavy Tissue: Yes

Vascular Exam
Telangiectasia/Spider Veins: Yes
Visible Varicose Veins: Yes

Pitting edema anterior calf right: Yes
Pitting edema ankle right: Yes
Pitting edema anterior calf left: Yes
Pitting edema ankle left: Yes

Areas of Hypothermia
Arms: Yes
Legs: Yes
Buttocks: Yes
Hips: Yes

Joints
Valgus of knees: Yes
Varus of ankles: Yes

General

Bilateral symmetric adiposity in the limbs and trunk (normal upper torso/back)
Non-Pitting edema
Tissue tender in areas affected
Negative Stemmer's Sign (not in late stages)
Cuffing at ankles or wrists
Hands and Feet Not Affected

Hypothermia of the skin
Bruising
Telangiectascias, petechiae or cherry angiomas (dilated blood vessels)

ASSESSMENT

1. R60.9 Lipedema
- Classical
2. M79. 605 Pain in the left leg
3. M79. 604 Pain in the right leg
4. M79.601 Pain in the right arm
5. M79.602 Pain in the left arm

PLAN

1.Lipedma reduction surgery anterior Legs
2. Lipedema Reduction surgery to abdomen with skin excision
3. Lipedema Reduction surgery to Posterior Legs
3. Lipedema Reduction Surgery to Trunk (hips, buttocks shelf)
4.. Lipedema Reduction to upper arms

ICD-10 codes

I89.0 Lymphedema
E88.2 Dercum's disease
I86.8 Varicose veins
I87.2 Chronic venous insufficiency
R60.9 Lipedema
M79. 605 Pain in the left leg
M79. 604 Pain in the right leg
M79.601 Pain in the right arm
M79.602 Pain in the left arm
Q79.62 Hypermobile Ehlers Danlos Syndrome
D89.40 Mast cell activation disease
I78.8 Other diseases of capillaries
L90.5 Scar conditions and fibrosis of skin
G89.4 Chronic pain syndrome

This visit was 60 minutes with >50% time spent counseling on lipedema, Dercum's disease and other causes of fat tissue growth and possible treatments that may help Mary.

Electronically signed by Jaime S Schwartz MD, FACS
Jaime S Schwartz MD, FACS
Board Certified Plastic Surgeon
Total Lipedema Care
240 S La Cienega, Suite 200
Beverly Hills, CA, 90211
Phone: 310-882-5454
Fax: 310-747-5908

2021-11-04 8:24 AM

August 8, 2022

My Lipedema Journey

I did not even know lipedema was a health condition until August of last year when my daughter, whom we believe also has lipedema, figured it out in search of why at 36, and having been a college athlete that works out 6 days a week, has a nutritionist and a trainer, her legs are so painful and look the way they do. She discovered this thing called Lipedema. That's when I started my journey to figure out what I now know I have, which is lipedema and lymphedema. Looking at photos of my grandma I'm pretty sure I know who passed it down.

It is a relief to have an answer, but at the same time I am frustrated that I have lived with it for this long not knowing any better and therefore not getting treatment much earlier in my life that may have prevented me from getting to this point where I have been diagnosed as stage 2. I went to see Dr. Karen Herbst last August in Tucson and she diagnosed me with stage 2 lipedema and lymphedema. I then did a video appointment with Dr. Schwartz a few months later and he also diagnosed me as well.

Looking back through the lens of lipedema and all the things that could have been different in my life is daunting to think about. I am 63 and don't want to live another day with this. I want to look forward to all the things that will make my life better.

Starting with my teen years, beginning with puberty, I noticed what I thought was cellulite at the top of my legs. As the years went on this crept down my legs with layers appearing on top of layers and around to the front and in the last 5 years it has appeared as cuffing below my knee at the top of my calves in the front. To cover this up I can recall less than a handful of times ever wearing shorts in public and wearing a swimsuit has always been especially embarrassing. I would always wear a coverup and take it off at the last minute before entering the water. I mostly wore capris in the summer and on vacation. As it grew down my legs I started wearing longer and longer capris and now I only wear pants, albeit cropped pants but they fall just above my ankles. The capris now get hung up on my calves as they are so large all around. It is currently embarrassing to go out in public because people stare at my legs. There are no longer any pants that will cover the bulging. It shows through my pants. I also have developed it in my buttocks and most recently in my arms.

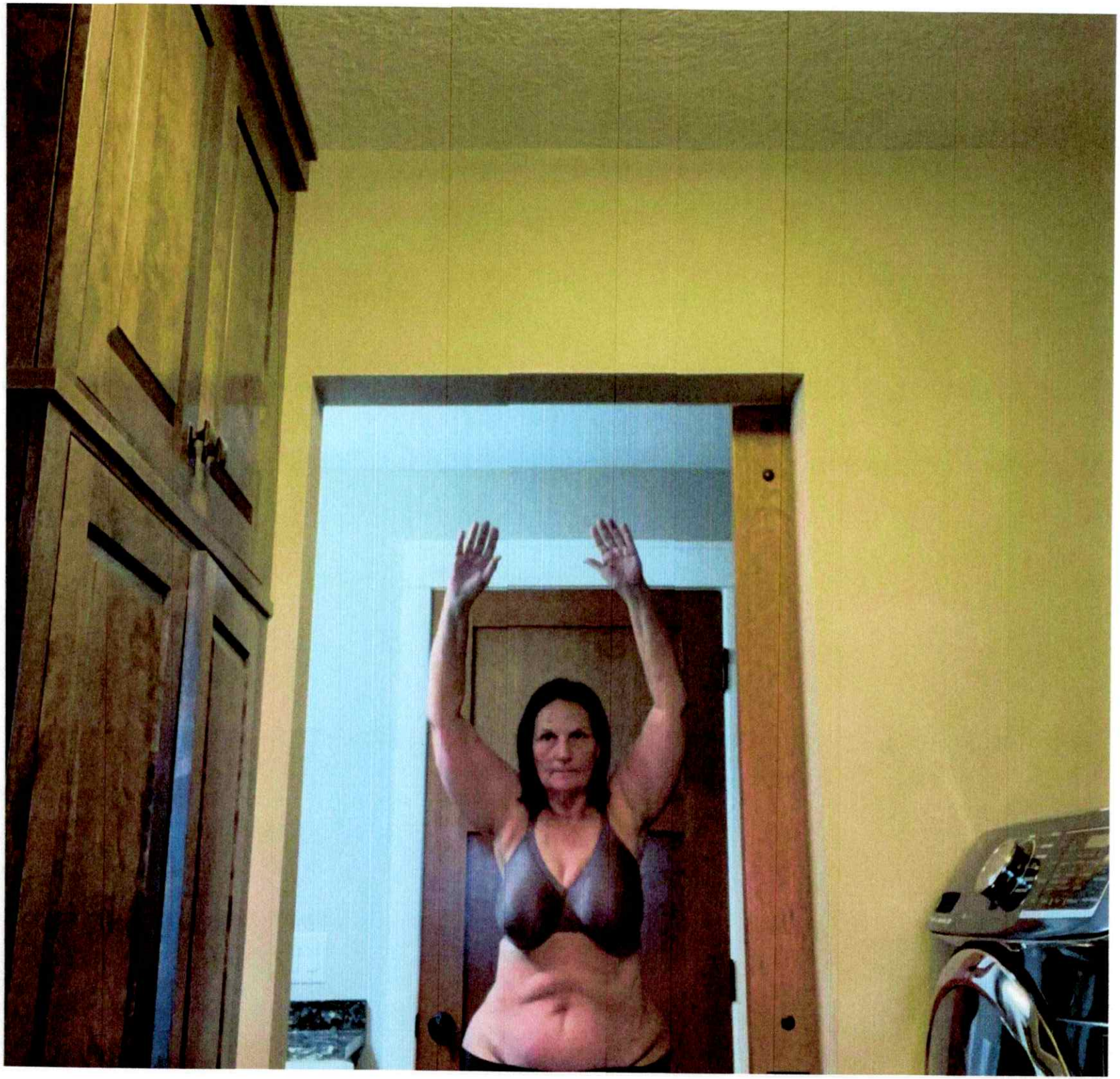
I gave birth to three kids and I went through menopause very early. It wasn't until the last ten years that I realized how low my vitamin D was. I currently take 10,000 iu per day to keep it a normal levels. I understand now this can happen in people with lipedema. I have also lost a lot of mobility with my legs being so large. It feels like what I imagine to be restless leg syndrome at night.

Once I got my diagnosis I got custom compression clothing for my arms and legs. I also got Tactile Medical pumps for my upper and lower body. I went through 6 weeks of physical therapy lymphatic drainage. But the thing I have found most helpful is going to a local massage therapist that specializes in lymphatic massages at a cost to me of $90.00 per session. I don't notice that affecting the size of my legs or arms, but I just feel a little better when I do them. I had been doing the massages prior to being diagnosed as I had already suspected a lymphatic problem as well as wearing compression socks I found at a local shoe store and on Amazon. Once I got the diagnosis I went to the massage therapist when I could get appointments that worked and got the most relief when for about a month and a half I went every two weeks, but that gets expensive and time consuming. I also saw a doctor about my veins and I need vein surgery but am holding off until I can get my legs taken care of first.

I have been dieting most of my adult life trying to get rid of this fat. I watch what I eat very closely and about four years ago lost thirty pounds. The lipedema did not go away. My legs got smaller, but did not appear any different. The calorie intake to try to keep that 30 pounds off was not sustainable. I also have hypothyroid. I used to walk a lot and ride bike, but I have arthritis in my knees and limited cartilage remaining. I don't know if the lipedema contributed to that but combined with the lost mobility from the size of my legs this is increasingly hard to do.

I believe with everything I have that the liposuction surgery to treat my lipedema would be life changing.

Mary Berns
15986 71st ST NW
South Haven, MN 55382
320-492-7404



APS
Archives of Plastic Surgery

Original Article

Liposuction in the Treatment of Lipedema: A Longitudinal Study

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Background Lipedema is a condition consisting of painful bilateral increases in subcutaneous fat and interstitial fluid in the limbs with secondary lymphedema and fibrosis during later stages. Combined decongestive therapy (CDT) is the standard of care in most countries. Since the introduction of tumescent technique, liposuction has been used as a surgical treatment option. The aim of this study was to determine the outcome of liposuction used as treatment for lipedema.

Methods Twenty-five patients who received 72 liposuction procedures for the treatment of lipedema completed a standardized questionnaire. Lipedema-associated complaints and the need for CDT were assessed for the preoperative period and during 2 separate postoperative follow-ups using a visual analog scale and a composite CDT score. The mean follow-up times for the first postoperative follow-up and the second postoperative follow-up were 16 months and 37 months, respectively.

Results Patients showed significant reductions in spontaneous pain, sensitivity to pressure, feeling of tension, bruising, cosmetic impairment, and general impairment to quality of life from the preoperative period to the first postoperative follow-up, and these results remained consistent until the second postoperative follow-up. A comparison of the preoperative period to the last postoperative follow-up, after 4 patients without full preoperative CDT were excluded from the analysis, indicated that the need for CDT was reduced significantly. An analysis of the different stages of the disease also indicated that better and more sustainable results could be achieved if patients were treated in earlier stages.

Conclusions Liposuction is effective in the treatment of lipedema and leads to an improvement in quality of life and a decrease in the need for conservative therapy.

Keywords Lipedema; Lipoedema; Lipectomy

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INTRODUCTION

Lipedema was first described by Allen and Hines as a condition consisting of a pathological increase in subcutaneous fat and edema in the lower limb [1]. It almost exclusively affects women, and there are very few published case reports of men with li-

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pedema [2]. Lipedema shows familial clustering; one study proposed an autosomal dominant inheritance with sex limitation [3].

Clinically, lipedema can be characterized in most cases as a chronic disease that begins in puberty and takes a progressive course. Typically, there is a symmetric increase in subcutaneous fat in the upper and lower legs due to both hyperplasia and hypertrophy [4], which can be seen through magnetic resonance imaging or computed tomography [5,6]. The feet are spared, so there is an excess of fat at the ankle, also known as the "inverse shouldering effect." The upper limb is affected in up to 30% of cases, however it is rarely affected in isolation [7].

In addition to the increase in subcutaneous fat, there is an increase in capillary permeability and fragility, resulting in both extravasation of fluid and easy bruising [8]. Evidence has also been found of morphologic changes in the lymphatic system, such as microaneurysms; however, the pathophysiological significance remains unclear [9].

In contrast to primary lymphedema, the lymphatic system remains unimpaired in the initial stages of lipedema and can keep up with the increased amount of interstitial fluid [4]. Accordingly, lymphoscintigraphy has shown increased lymphatic transport in some patients [10]. During the later stages of lipedema, the amount of fluid produced exceeds the transport capacity of the lymphatic system, and the pressure of the fat tissue itself causes obstruction of the lymphatic vessels, resulting in secondary lymphedema [10,11]. Additionally, the deposition of protein-rich edema causes fibrosis of the tissue, further impairing lymphatic drainage. The term "lipolymphedema" is used to describe the combined pathology during these stages.

It is known that deposition of fat is positively correlated with stasis of blood and lymphatic fluid [12]. Therefore, a mutual interaction between adipose tissue and the lymphatic system exists.

Lipedema is diagnosed based on a clinical examination and anamnesis. Patients typically show disproportionality between a normal upper body and symmetrically enlarged lower limbs, and this is often accompanied by elevated body mass index (BMI) levels. Furthermore, the amount of fat in the affected areas is almost entirely unaffected by physical activity or dietary measures.

Typical clinical complaints include feeling of tension, pain upon pressure, and easy bruising. These symptoms are important in the differential diagnosis of lipedema, particularly in the common case where lipedema and obesity are present at the same time.

Lipedema can be classified into 3 clinical stages based on morphological appearance [13]: Stage I, a smooth skin surface with homogenous thickening of the subcutis; Stage II, a bumpy, wave-like skin surface with nodular structures in the thickened subcutis; Stage III, an increase in nodular changes and overhanging masses of tissue.

The condition is a major psychosocial burden for most patients, causing pain that often limits their capacity for exercise. In addition, standing for long periods of time and high temperatures are not tolerated well by those with lipedema, and in severe cases, the condition may cause absence from work or lead to occupational disability.

The most widely applied therapy for lipedema is combined decongestive therapy (CDT), which consists mainly of manual lymphatic drainage and wearing compression garments. It aims to reduce orthostatic edema and limit recurrence.

Classic dry liposuction cannot be applied to lipedema patients due to the potential injury to lymphatic vessels. However, the introduction of the tumescent technique in the 1980s has made the application of liposuction possible. Cadaver studies have shown markedly reduced injury to lymphatic structures when the tumescent technique was used [14].

In 1994, Rudkin and Miller [15] described liposuction in combination with skin and subcutaneous fat excisions as a treatment option for lipedema, in contrast to lymphedema. In 2002, liposuction alone was presented as a method to surgically reduce the pathological increase in subcutaneous fat [15-17].

The literature on lipedema, in general, is limited. Most articles are in German and fall under the disciplines of dermatology or phlebology. The present study aimed to examine the long-term results of liposuction in patients with lipedema who were treated in our plastic surgery clinic.

METHODS

From July 2010 to July 2013, 33 female patients received a total of 104 liposuction procedures in our clinic as treatment for lipedema. Patients were classified preoperatively into the 3 clinical stages described above.

At the end of 2013, these patients received a standardized questionnaire composed of 18 items. Visual analog scales (VAS) from 0 to 10 in increments of 0.5 were used to assess the severity of spontaneous pain, pain upon pressure, feeling of tension, bruising, cosmetic impairment, and general impairment of quality of life before and after liposuction treatment. Questions were also asked regarding weight, the frequency of manual lymphatic drainage per month, and the number of hours per day the patient wore compression garments. These last two values were added together to give a CDT score. In 2015, the assessment was repeated using the same questions but assessed only the

current state of the patients' symptoms.

Twenty-five patients responded in 2013 and were included in this study, and all 25 patients were available for follow-up in 2015.

The first postoperative follow-up was performed between 4 and 34 months after patients received their last liposuction procedure, with a mean follow-up time of 16 months. The second postoperative follow-up was performed between 25 and 56 months after the last liposuction procedure, with a mean follow-up time of 37 months.

For each patient, lipedema diagnosis had been clinically confirmed by a lymphologist, ruling out other lymphatic diseases. Each procedure was covered by health insurance after a medical proposal was accepted, and the patient had typically already received at least 6 months of CDT without improvement of symptoms.

Tumescent liposuction was performed using saline with epinephrine (1:1,000,000) after obtaining informed consent. All liposuctions were performed as inpatient procedures, and general anesthesia was used during the multi-hour procedures to increase patient comfort and reduce operation time. Antibiotics were administered as a single shot for perioperative prophylaxis only.

Patients were told to bring their compression garments, which were put on immediately after liposuction. New garments were measured 3 weeks after liposuction and after swelling had decreased, and manual lymphatic drainage was allowed after postoperative day 2.

Statistical analyses of complaint severity and the CDT score were performed in SPSS ver. 21.0 for Mac (IBM Corp., Armonk, NY, USA) using repeated-measures analysis of variance (ANOVA) with the Bonferroni correction after meeting the criteria of the Mauchly test of sphericity. All the tests were 2-sided, with $\alpha = 0.05$ and $P < 0.05$ considered statistically significant.

RESULTS

The age at the first performed liposuction ranged from 23 to 64 years, with a median of 45 years. BMI upon presentation ranged from 24.5 to 50.6 kg/m^2, with a mean of 35.3 kg/m^2. After treatment, BMI ranged from 22.7 to 47.2 kg/m^2, with a mean of 33.9 kg/m^2.

All patients had lipedema of the lower limb. Additional upper limb involvement was present in 9 patients (36%). One patient

Table 1. Results from the analysis of the questionnaires (n=25)

Measured variable	Preoperative		Postoperative 1		Postoperative 2	
	Mean	SD	Mean	SD	Mean	SD
Complaints[a]						
Spontaneous pain	7.20	1.46	3.70	1.79	4.28	2.10
Stage II (n=11)	7.00	1.40	3.36	2.01	4.00	2.18
Stage III (n=13)	7.54	1.44	4.12	1.58	4.61	2.13
Sensitivity to pressure	7.38	1.79	3.98	1.83	4.42	2.08
Stage II (n=11)	7.05	1.29	3.50	1.97	3.82	2.27
Stage III (n=13)	7.77	1.56	4.46	1.71	4.81	1.90
Feeling of tension	7.52	1.36	3.26	2.28	4.06	2.18
Stage II (n=11)	7.09	1.00	3.14	2.47	4.00	2.35
Stage III (n=13)	8.08	1.35	3.62	2.07	4.35	2.01
Bruising	6.96	1.58	4.36	1.91	4.64	1.83
Stage II (n=11)	6.82	1.54	3.86	1.78	4.46	1.89
Stage III (n=13)	7.15	1.70	4.65	2.03	4.66	1.85
Cosmetic impairment	8.98	0.81	5.10	1.93	7.36	1.66
Stage II (n=11)	8.68	0.72	4.55	1.97	6.96	1.52
Stage III (n=13)	9.31	0.78	5.58	1.91	7.85	1.69
Impairment to quality of life	8.38	1.06	4.30	1.80	5.16	1.60
Stage II (n=11)	8.22	1.35	4.09	2.12	4.64	1.89
Stage III (n=13)	8.62	0.71	4.42	1.63	5.46	1.23
CDT score[b]	20.48	4.13	16.38	6.97	13.90	7.32
Stage II (n=9)	21.22	4.58	13.33	9.15	12.00	9.89
Stage III (n=11)	19.91	4.06	18.55	3.93	14.90	4.57

SD, standard deviation; CDT, combined decongestive therapy.

[a]Visual analog scale of symptom severity ranging from 0 to 10 in increments of 0.5, with 10 being the most severe; [b]The CDT score was calculated as the sum of the number of manual lymphatic drainage sessions per month and the number of hours spent wearing compression garments per day. Four patients were excluded who did not receive full CDT preoperatively.

had stage I lipedema, 11 patients had stage II lipedema, and 13 patients had stage III lipedema.

On average, patients received 3 procedures, with a range of 1 to 7 procedures. A total of 72 liposuctions were performed on the 25 patients. In 41 liposuctions, a vibration-assisted device was used, and in 31 liposuctions, a water jet-assisted device was used.

The operation time, which included infiltration, was 116 minutes on average and ranged from 58 to 251 minutes.

The mean volume of removed fat per liposuction was 3,106 mL (range, 1,450–6,600 mL) and the mean volume of total removed fat per patient was 9,914 mL (range, 4,000–19,850 mL).

One patient developed erysipelas after liposuction, which required antibiotic treatment. However, there were no other complications during the study period. Therefore, the complication rate was 1.39%.

Complaints

Table 1 shows that patients reported substantial lipedema-associated complaints preoperatively. Spontaneous pain was reported with a mean VAS score of 7.2 (standard deviation [SD], 1.46); the equivalent of "severe" to "very severe" spontaneous pain. Sensitivity to pressure and feeling of tension were reported with mean VAS scores of 7.38 (SD, 1.79) and 7.52 (SD, 1.36), respectively, falling within the "very severe" range. The reported cosmetic impairment ranged from "severe" to "unbearable," resulting in a mean VAS score of 8.98 (SD, 0.81). General impairment to quality of life was also reported as "very severe," with a mean VAS score of 8.38 (SD, 1.06).

Fig. 1 shows that the severity of all analyzed complaints was significantly reduced over the course of liposuction treatment by the time of the first postoperative follow-up. All but 1 of the patients reported a reduction in spontaneous pain (the chief complaint in lipedema), with a mean difference in VAS score of 3.5 (95% confidence interval [CI], 2.83–4.17). Furthermore, all but 1 of the patients reported a reduction in impairment of quality of life, with a mean difference in VAS score of 4.08 (95% CI, 3.12–5.04).

The Bonferroni-corrected P-value was < 0.001 for all 6 complaints. At the second postoperative follow-up, only the severity of cosmetic impairment significantly increased since the first postoperative follow-up, and there was significant improvement in all symptoms between the preoperative period and the second postoperative follow-up. Fig. 2 shows a comparative subgroup analysis of general impairment to quality of life for patients with stage II lipedema and stage III lipedema. This symptom was chosen for analysis because it was the most important complaint. While a significant reduction in the severity of the complaint from the preoperative period to the first postoperative follow-up was observed for both stage II and stage III patients, only stage III patients experienced a significant increase in the severity of the complaint from the first postoperative follow-up to the second postoperative follow-up.

Conservative therapy

Three patients did not wear compression garments preoperatively and only started wearing them after liposuction in order to retain the results of the treatment. One patient who did not receive manual lymphatic drainage preoperatively received it postoperatively. Twenty-one patients regularly received manual lymphatic drainage and wore compression garments preoperatively. For these patients, CDT scores were calculated as the sum of manual lymphatic drainage sessions per month and hours spent wearing compression garments per day.

At the second postoperative follow-up, the CDT scores of 14 patients had decreased after liposuction treatment, with 3 patients no longer in need of further conservative therapy. Three patients showed no change in their CDT scores, while 4 patients showed an increase in their CDT scores.

For all patients who received full CDT preoperatively, the mean CDT score had decreased from 20.48 (SD, 4.13) during the preoperative period to 16.38 (SD, 6.97) during the first postoperative follow-up, and then decreased further to 13.9 (SD, 7.32) during the second postoperative follow-up. Fig. 2 shows that in the repeated-measures ANOVA, only the reduction in CDT score from the preoperative period to the second postoperative follow-up was found to be significant ($P = 0.011$).

A comparative subgroup analysis of patients with stage II lipedema and stage III lipedema showed a significant decrease in the CDT score from the preoperative period to the second postoperative follow-up for stage II patients only. The reduction in CDT score from the preoperative period to the second postoperative follow-up for stage III patients was barely non-significant ($P = 0.051$).

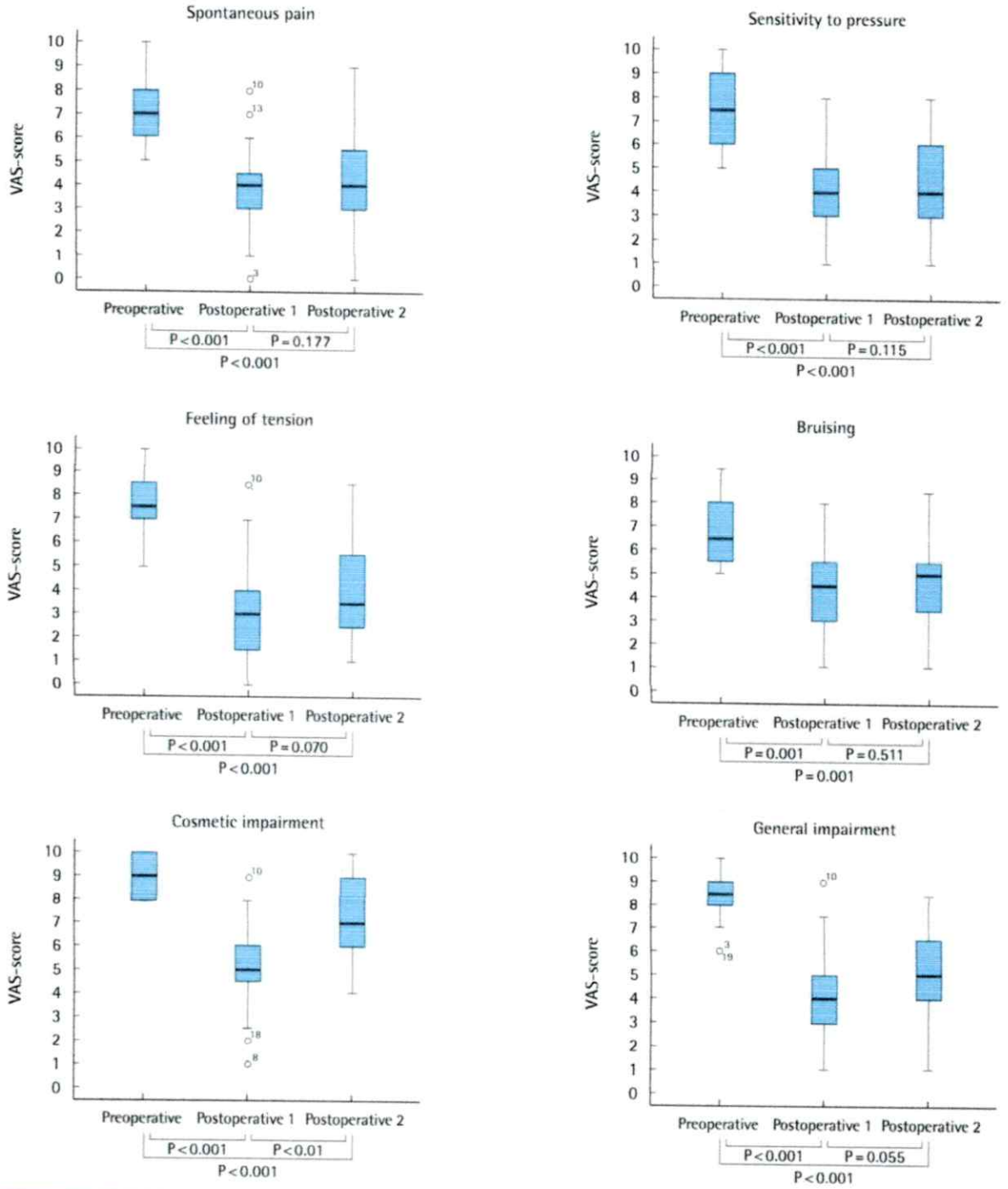
DISCUSSION

In most countries, CDT is the first line of therapy for lipedema. Though this treatment aims to stop the progression of the disease and reduce edema, many patients still see an increase in subcutaneous fat and aggravation of symptoms.

When the tumescent technique for liposuction was introduced in the late 1980s [18], the safety of liposuction improved and injury to lymphatic vessels was reduced [14,19]. Subsequently, liposuction became an option in treating lipedema and reducing the amount of fat tissue.

Fig. 1. Complaints

Box plots of the complaints before and after liposuction with accompanying P-values (n = 25). VAS, visual analog scales.



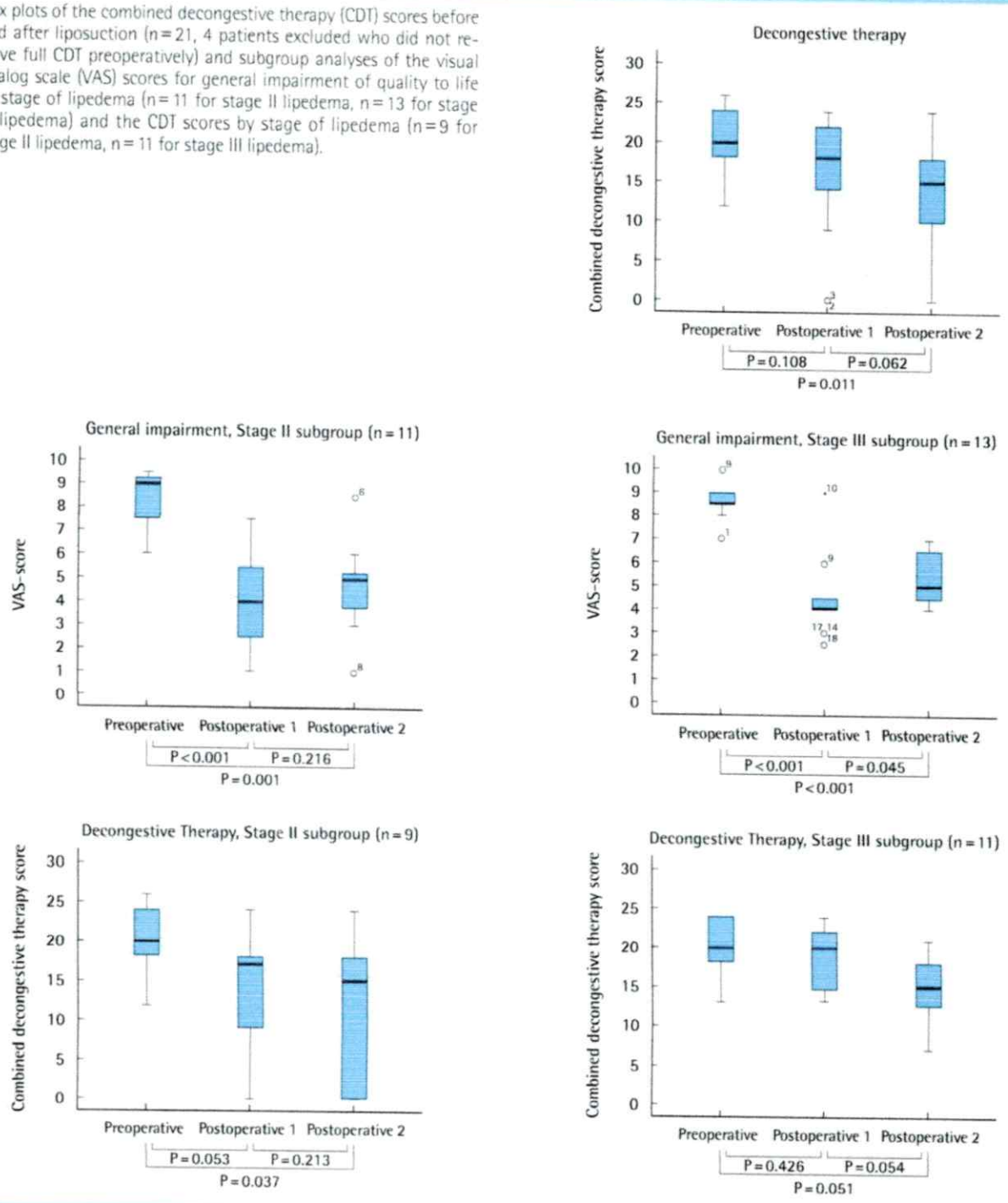
Our study showed that liposuction was an effective treatment for lipedema with good long-term outcomes. Our findings support the results of previous studies, such as Schmeller et al. [20], Rapprich et al. [21], and the recent long-term study by Baumgartner et al. [22].

However, unlike the aforementioned studies, the data for the preoperative period were collected retrospectively, representing a possible bias.

An average operation time for liposuction under tumescent anesthesia that includes infiltration has been reported as 5.5

Fig. 2. Combined decongestive therapy scores and subgroup analyses

Box plots of the combined decongestive therapy (CDT) scores before and after liposuction (n = 21, 4 patients excluded who did not receive full CDT preoperatively) and subgroup analyses of the visual analog scale (VAS) scores for general impairment of quality to life by stage of lipedema (n = 11 for stage II lipedema, n = 13 for stage III lipedema) and the CDT scores by stage of lipedema (n = 9 for stage II lipedema, n = 11 for stage III lipedema).



hours. In our study, the average operation time under general anesthesia that included infiltration was roughly 2 hours, yielding comparable amounts of removed fat [22].

In accordance with the Practice Advisory on Liposuction published by the American Society of Plastic Surgeons, we believe that general anesthesia has advantages over tumescent anesthesia for long and complex liposuctions, such as those used to treat lipedema [23].

General anesthesia has been shown to be a safe procedure and has a decreased risk of aspiration and airway complications when compared to sedation [24]. This may be needed when operating under tumescent anesthesia to alleviate patient dis-

Fig. 3. Case example 1

A 24-year-old patient with stage II lipedema preoperatively (A) and 10 months after 2 liposuctions (B). A total of 8,800 mL of fatty tissue was removed from her legs.

Fig. 4. Case example 2

A 65-year-old patient with stage III lipedema preoperatively (A) and 6 months after 3 liposuctions (B). A total of 11,600 mL of fatty tissue was removed from her legs.

comfort.

During our study, there was only 1 minor infectious complication from the 72 liposuctions, resulting in a complication rate of 1.4%. Schmeller et al. [20] saw the same rate of infection in 349 liposuctions used to treat lipedema, and Rapprich et al. [21] reported just 1 case of deep vein thrombosis during 15 years of surgical treatment for lipedema. In general, liposuction using the tumescent technique carries a low surgical risk and has been shown to be a safe and appropriate procedure [25].

The patient examples in Figs. 3 and 4 show that liposuction led to a marked reduction in the volume of fatty tissue in the affected limbs and the disproportionality of these limbs to the rest of the body. Although this was not measured quantitatively in our study, Rapprich et al. [21] were able to show volume reduction in lipedema patients treated with liposuction using 3-dimensional volumetry.

The severity of all major symptoms of lipedema was significantly reduced, and there was a significant reduction in the severity of impairment of quality to life, as reported by the patients.

This corresponds with our clinical experiences, where we have found that lipedema patients benefit greatly from liposuction treatment and display a very high level of gratitude.

After extensive liposuction, the resulting excess skin tissue may harm the long-term aesthetic outcome. This may be a possible explanation for the increase in the VAS score for cosmetic impairment that was measured during the second postoperative follow-up and was perceived to be caused by the disease. Lifting operations should be considered for these patients, taking all necessary precautions to preserve lymphatic vessels.

We propose a simple score to quantify the need for CDT. From our clinical experience and that of our cooperating lymphologists, we have found that lipedema patients wear compression garments for roughly 8 to 10 hours per day on average, and patients will typically receive 2 manual lymphatic drainage sessions per week. Deviations from these patterns depend on symptom severity and distribution. Thus, summing the number of hours spent wearing compression garments per day and the number of manual lymphatic drainage sessions per month is an easy way to quantify CDT in a single score. Using this score, we were able to show for the first time that liposuction for patients with lipedema led to a significant decrease in the need for conservative lipedema treatment and also improved the quality of life for these patients. Previous studies that had already shown that liposuction may result in a decreased need for conservative lipedema treatment did not quantify this need or test for signifi-

cance [20,21].

Our data suggest that liposuction treatment for stage II lipedema provides a more sustainable reduction in the impairment of quality to life and a larger decrease in the need for conservative therapy than liposuction treatment for stage III lipedema.

Due to the development of secondary lymphedema and the irreversible damage to the lymphatic system that occurs in later stages of the disease, liposuction should be implemented as part of the standard therapy for lipedema at early stages. This will prevent disease progression, improve quality of life, and reduce the need for decongestive therapy.

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Tumescent liposuction in lipoedema yields good long-term results

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Summary

Background Lipoedema is a painful disease in women with circumscribed increased subcutaneous fatty tissue, oedema, pain and bruising. Whereas conservative methods with combined decongestive therapy (manual lymphatic drainage, compression garments) have been well established over the past 50 years, surgical therapy with tumescent liposuction has only been used for about 10 years and long-term results are unknown.

Objectives To determine the efficacy of liposuction concerning appearance (body shape) and associated complaints after a long-term period.

Methods A total of 164 patients who had undergone conservative therapy over a period of years, were treated by liposuction under tumescent local anaesthesia with vibrating microcannulas. In a monocentric study, 112 could be re-evaluated with a standardized questionnaire after a mean of 3 years and 8 months (range 1 year and 1 month to 7 years and 4 months) following the initial surgery and a mean of 2 years and 11 months (8 months to 6 years and 10 months) following the last surgery.

Results All patients showed a distinct reduction of subcutaneous fatty tissue (average 9846 mL per person) with improvement of shape and normalization of body proportions. Additionally, they reported either a marked improvement or a complete disappearance of spontaneous pain, sensitivity to pressure, oedema, bruising, restriction of movement and cosmetic impairment, resulting in a tremendous increase in quality of life; all these complaints were reduced significantly ($P < 0{\cdot}001$). Patients with lipoedema stage II and III showed better improvement compared with patients with stage I. Physical decongestive therapy could be either omitted (22·4% of cases) or continued to a much lower degree. No serious complications (wound infection rate 1·4%, bleeding rate 0·3%) were observed following surgery.

Conclusions Tumescent liposuction is a highly effective treatment for lipoedema with good morphological and functional long-term results.

Lipoedema, first described in the 1940s in the U.S.A.,[1,2] is characterized by bilateral symmetric enlargement mainly of the legs as a result of abnormal deposition of subcutaneous fatty tissue in combination with oedema. Despite being a specified clinical entity, epidemiological data are still unknown.

The disease occurs exclusively in women; it is probably attributable to an autosomal dominant inheritance with sex limitation.[3] In most cases, hips, thighs ('jodhpur-like riding breeches'), knees and lower legs, sometimes with a fatty cuff at the ankles (Turkish-pants phenomenon, inverse shouldering effect) are affected; arms are rarely affected and hands and feet are never involved. The accumulation of fluid in the form of orthostatic oedema results in pain, tenderness and sensitivity to pressure; this is expressed in synonyms such as lipalgia, adiposalgia, adipoalgesia, adiposis dolorosa, lipomatosis dolorosa or painful column leg. Together with easy bruising, it causes significant physical morbidity.

Whereas lipoedema may appear in women with generalized obesity, body weight is normal in many patients. The obvious disproportion between a slim upper half of the body and large lower extremities cannot be eliminated by weight loss brought about by diet or physical exercise; this often results in considerable frustration and psychological problems.[2,4]

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In the majority of patients, the disease starts almost imperceptibly after puberty but may also develop at other periods of hormonal change, such as pregnancy or menopause; it persists lifelong and progresses gradually. At the beginning, the skin is smooth and the subcutaneous layer is thickened, soft and with an even structure (stage I); the skin might be cool in certain areas as a result of functional vascular dysbalance. Over time, subcutaneous nodules develop and the skin surface becomes uneven (stage II). After several decades, patients may present with huge amounts of tender subcutaneous tissue and bulging protrusions of fat, mainly at the inner side of the thighs or knees (stage III), which lead to an impairment of gait.

Although the number of textbooks and publications dealing with lipoedema is extensive in Germany,[5] literature is sparse in English.[6] Many clinicians are still unaware of this disease, with lipoedema being frequently unrecognized or misdiagnosed.[7,8] Confusion often exists concerning the differential diagnosis of lipohypertrophy (similar disproportion, symmetric, but no oedema and no pain), primary lymphoedema (asymmetric, decreased lymphatic flow, positive Kaposi–Stemmer skin fold sign, no pain, no bruising), phleboedema (pathological vein function tests, typical skin changes), obesity (increased volume on the trunk, increased weight, body mass index > 30 kg m^{-2}, often no obvious disproportion, no oedema, no pain), Dercum disease (increased volume, pain, but no oedema) and Launois–Bensaude benign symmetric lipomatosis [increased accumulation of fatty tissue with typical disproportion, mostly localized in the neck (type I), shoulders and upper arms (type II) or pelvic region (type III), no pain, no oedema]. The diagnosis of lipoedema can be made only on the basis of the patient's clinical signs and symptoms,[9] ultrasound or magnetic resonance imaging has been used for the exact localization and quantification of fatty tissue.[8]

Conservative treatment with manual lymphatic drainage and compression hosiery or bandages (combined physical therapy, decongestive physiotherapy, known as CDT) is used as a standard regime worldwide to eliminate oedema.[4] In 2002, the first results concerning the surgical therapy of lipoedema by tumescent liposuction to reduce the subcutaneous fatty tissue were reported during the 20th World Congress of Dermatology in Paris.[10,11] Since 2005, liposuction has become an integrated part of therapy in the guidelines of lipoedema of the German Society of Phlebology.[5]

Our aim was to determine the efficacy of liposuction concerning appearance and associated complaints over a long-term period and to clarify whether decongestive conservative therapy (manual lymphatic drainage, compression treatment) can be reduced in the years following surgery.

Patients and methods

From January 2003 to December 2009, a total of 255 female patients with lipoedema were treated with tumescent liposuction in the Hanse-Klinik, a specialized clinic in Lübeck, Germany. One hundred and sixty-five patients who had completed treatment for at least 6 months, received standardized questionnaires. Of the 114 questionnaires returned, 112 (68%) could be evaluated. In addition, many patients were seen clinically, or photographs could be analysed.

The patients' mean age was 38·8 years (range 20–68); the average weight was 79·3 kg (range 50–123). Thirty-five patients presented with lipoedema stage I, 75 patients with stage II and two patients with stage III. Nearly all had undergone conservative therapy for many years and either had experienced no obvious improvement of complaints or had noticed a progression of subcutaneous fatty volume.

Following informed consent from each patient, liposuction was performed on legs, hips and arms under pure tumescent local anaesthesia (TLA) with blunt vibrating microcannulas of 3 and 4 mm in diameter (power-assisted liposuction).[5,12]

The average amount of TLA solution infiltrated was 7707 mL (range 2564–13 450), the average time of surgery was 2 h (40 min to 3 h 35 min). Of 112 patients, 12 patients were operated on once, 29 patients twice, 28 patients three times, 23 patients four times, 12 patients five times, four patients six times and four patients seven times. The minimum time between the operations was 1 month, the maximum about 1 year. Because in most cases the German health insurance system refused to pay for this treatment, the financial situation of the patients often determined the intervals between the liposuctions. The average amount of fat removed was 9846 mL per person (range 1000–25 600) or 3077 mL per session (range 450–7000), depending on the size and number of operated areas (hips, outer thighs, inner thighs, front thighs, back thighs, knees, outer lower legs, inner lower legs, upper arms, lower arms, buttocks). The patients could be re-evaluated after a mean of 3 years and 8 months (1 year 1 month to 7 years 4 months) after the first liposuction and a mean of 2 years and 11 months (8 months to 6 years and 10 months) after the last liposuction.

Prior to the first surgery and after the last surgery, physical measurements and patient-reported symptoms/complaints were assessed. Physical measurements were limb circumference and weight; in addition patients reported their clothing size.

Because of a lack of validated questionnaires for the assessment of lipoedema-related complaints we used a new questionnaire including items with high face validity. By means of seven items, patients reported the intensity of spontaneous pain, pain upon pressure, oedema, bruising, restriction of movement, cosmetic impairment and reduction in quality of life. The quantification of these items was performed on five-point-scales: 0, none; 1, minor; 2, medium; 3, strong; 4, very strong. In addition these items were summarized to a total score named 'general impairment'.

For these seven parameters (complaints) and the total score (general impairment) statistical analysis was conducted by using t-tests for dependent samples to compare the intensity of complaints prior to surgery with their intensity after the last operation. Analyses of variances were conducted to determine differential effects of the patient's age, stage and time since last liposuction. Statistics were performed with SPSS 16.0

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scar formation during wound healing (mainly at the inner and lower legs) disappeared completely within weeks.

Discussion

To our knowledge, this is the first long-term study concerning surgical therapy (liposuction) of lipoedema to be presented in English. For many decades, only conservative treatment with manual lymphatic drainage and compression hosiery was available. This so-called combined decongestive therapy (CDT) was introduced by the Dane, E. Vodder, in the 1930s and was modified by the German, J. Asdonk, in the 1960s. The reduction of oedema decreases tenderness and aching distress in the affected extremities, but only for a short period. Despite lifelong decongestion, the amount of subcutaneous tissue increases and the disease worsens over time. Diet, physical activities such as sport, the restriction of fluid and diuretics are all without benefit.[4]

Until the end of the last century, fat removal by lipectomies or liposuction under general anaesthesia without subcutaneous infiltration ('dry technique') and large sharp cannulas caused considerable tissue damage, often in combination with unacceptable functional and cosmetic results.

The introduction of TLA in the 1990s[14] with the infiltration of large amounts of fluid ('wet technique') has made liposuction a safe and effective procedure.[15,16] With the use of blunt vibrating microcanulas of 3–4 mm in diameter (power- or water-assisted liposuction), no relevant tissue damage occurs.[17–20] Since 2005, liposuction has been integrated into the guidelines of care for lipoedema by the German Society of Phlebology and has been further stressed in an update in 2009.[4]

Our figures demonstrate that liposuction of lipoedema under pure TLA is time-consuming. The whole operation including the infiltration of the local anaesthetic takes an average time of about 5·5 h and an average of 7·7 L of tumescent solution is needed per session. The mean duration of the liposuction itself is 2 h, a reasonable work expenditure for the surgeon. During this time, an average of about 3 L of fatty tissue is removed. This is a much larger amount than has been reported in other studies, where amounts between 1·1 and 1·9 L have been removed per session.[16,18,21,22] Most of our patients, the majority of them with lipoedema stage II, needed two to four liposuctions but some had such extensive fatty volumes that more than five sessions were necessary. This number is much higher than that in 'standard' liposuctions performed for cosmetic reasons only.

If handled well, the results of liposuction are good with regard to morphology. The removal of fatty tissue in our patients causes an obvious reduction of circumferences in hips and extremities with a distinct improvement of body size and a minor reduction of weight. However, the most important point is the disappearance of disproportionality between the upper and lower parts of the body. Figures 2–4 show typical results before and after surgery in various body regions.

Improvements of complaints are also obvious after surgery: spontaneous pain, pain attributable to pressure, amount of oedema, bruising, reduction of movement, cosmetic impairment and reduction in quality of life showed impressive improvements with significant differences pre- and postoperatively; the same was true with the summary score termed 'general impairment'. Similar results have been reported in the literature with a smaller patient group ($n = 25$) after a shorter period (6 months after liposuction).[22]

Fig 2. (a) Lipoedema in a 42-year-old woman. (b) Result 1 year and 8 months after four liposuctions (hips, thighs, buttocks, lower legs), removal of 18 300 mL of fatty tissue.

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for Windows (SPSS, Chicago, IL, U.S.A.). The statistical analysis was performed without alpha adjustments; therefore, the results are considered mainly explorative.[13] According to this, the term 'significant' (used for P-values < 0·05) is given as a description of differences.

Results

Changes of body shape

The reduction of subcutaneous fatty tissue caused a decrease in the circumference of hips, legs and/or arms, resulting in a proportionate body at the end of surgery; mean reductions of 8 cm (range 1–23) in the thighs (inguinal region) and of 4 cm (1–11) in the middle of the lower legs (calves) were achieved.

The average weight before surgery was 79·3 kg (range 50–123) and before the last liposuction 78·9 kg (49·5–118); in the questionnaire, an actual average weight of 75 kg (48·5–113) was mentioned.

With respect to off-the-peg clothing (trousers), 38% of the patients mentioned a reduction of one size, 25% of two sizes and 11% of three sizes; 23% of the patients did not notice any change and 2% experienced an increase of one size.

Improvement of complaints

The score values (minimum: 0; maximum: 4) of spontaneous pain, pain attributable to pressure, amount of oedema, bruising, reduction of movement, cosmetic impairment and reduction in quality of life showed significant differences pre- and postoperatively. Table 1 shows the mean improvement of all these complaints typical for lipoedema. An improvement was also seen in the summary score (overall severity score) (Fig. 1). This summary score, including all seven values in one figure, represented the 'general impairment'; with values from 2·81 preoperative to 0·86 postoperative, its difference was also significant. The clinical effect of all these differences is represented by the effect size, which describes the magnitude of a change. A value > 0·50 is classified as medium, a value > 0·80 may be classified as a strong effect. The highest scores of the effect size were seen in cosmetic appearance and reduction of quality of life. These two items also had the highest values (3·33 and 3·36) of all parameters before surgery.

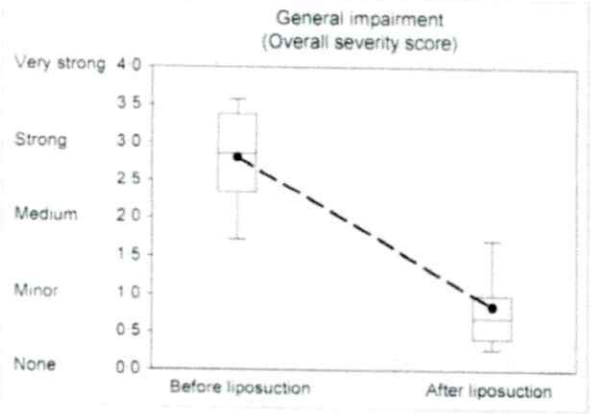

Fig 1. Improvement of general impairment in lipoedema after liposuction (mean values).

In addition, the general impairment was examined by analysis of variances according to age groups, stage of lipoedema and time after the last liposuction. Table 2 demonstrates no difference in the amount of improvement between the various age groups. For severity of lipoedema, stage II (75 patients) and stage III (two patients) were pooled into one group; in comparison with stage I (35 patients), this group showed a higher improvement (P = 0·02). No significant differences in improvement could be seen with regard to time after liposuction (1–24, 25–36, 37–48 or 49–82 months).

Reduction of conservative therapy

Of 112 patients, 67 had combined physical therapy (manual lymphatic drainage and compression) before the operation(s).

Table 1 Changes of complaints

	Preoperative		Postoperative			
	Mean	SD	Mean	SD	P-value (t-test)	Effect-size
Complaint[a]						
Spontaneous pain	1·88	1·33	0·37	0·60	< 0·001*	1·36
Pain because of pressure	2·91	1·06	0·91	0·92	< 0·001*	2·01
Oedema	3·06	1·02	1·27	0·88	< 0·001*	1·88
Bruising	3·01	1·03	1·26	1·11	< 0·001*	1·63
Restriction of movement	2·03	1·36	0·28	0·68	< 0·001*	1·58
Cosmetic impairment	3·33	0·88	1·08	0·91	< 0·001*	2·52
Reduction in quality of life	3·36	0·86	0·76	0·91	< 0·001*	2·95
General impairment[b]	2·81	0·70	0·86	0·63	< 0·001*	2·93

[a]Scale: 0, none; 1, minor; 2, medium; 3, strong; 4, very strong. *P < 0·001. [b]Reliability (internal consistency) of the total score 'general impairment' is 0·77 (preoperative) and 0·76 (postoperative) (= good reliability).

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Table 2 Differential analysis of 'general impairment' using age, stage and months following last liposuction as factors in addition to time effects

	Groups	n	Preoperative, mean (SD)	Postoperative, mean (SD)	Source	Analysis of variance P-value
Age (years)	20–29	27	2·7 (0·8)	0·7 (0·5)	Group (g)	0·07
	30–39	41	2·9 (0·7)	1·1 (0·9)	Time (t)	< 0·001**
	40–49	25	2·7 (0·7)	0·7 (0·3)	Interaction g × t	0·85
	50–68	19	2·9 (0·5)	0·8 (0·5)		
			P = 0·46	P = 0·07		
Stage	I	35	2·6 (0·7)	0·9 (0·7)	Group (g)	0·20
	II/III	77	2·9 (0·7)	0·8 (0·6)	Time (t)	< 0·001 **
			P = 0·02*	P = 0·66	Interaction g × t	0·02*
Months following last liposuction	1–24	33	2·9 (0·6)	0·8 (0·6)	Group (g)	0·66
	25–36	33	3·0 (0·7)	0·8 (0·7)	Time (t)	< 0·001**
	37–48	19	2·5 (0·9)	0·9 (0·4)	Interaction g × t	0·11
	49–82	27	2·7 (0·6)	1·0 (0·7)		
			P = 0·19	P = 0·69		

P-values in the columns headed preoperative and postoperative are related to a comparison at this point of measurement. **p < 0·001. The results demonstrate a decrease of general impairment without an influence of age and months following last liposuction. The significant interaction between stage and time (*P = 0·02) shows that the decrease of general impairment is greater in patients with higher stages of lipoedema.

Another 18 patients only had compression garments and eight patients exclusively used decongestive physical therapy. In 19 patients, no conservative treatment before surgery was performed.

Table 3 shows the changes in conservative treatment (in percentages) in the 67 patients who had previously undergone combined physical therapy. Of these, 13 patients (19·4%) needed manual lymphatic drainage and compression as often as before; 20 patients (29·9%) also continued with physical decongestive therapy, but less often; 13 patients (19·4%) still used compression garments; six patients (9%) declared that they only needed manual lymphatic drainage from time to time; 15 patients (22·4%) reported that they no longer required conservative therapy.

Table 3 Changes of conservative therapy postoperatively in four subgroups

	n	%
(a)		
Before		
Lymphatic drainage and compression	67	100
After		
Lymphatic drainage and compression (as before)	13	19·4
Lymphatic drainage and compression (less than before)	20	29·9
Only compression	13	19·4
Only lymphatic drainage	6	9
No lymphatic drainage, no compression	15	22·4
(b)		
Before		
Only compression	18	100
After		
No compression	5	27·8
(c)		
Before		
Only lymphatic drainage	8	100
After		
No lymphatic drainage	4	50
(d)		
Before		
No lymphatic drainage, no compression	19	100
After		
Lymphatic drainage, compression	3	15·8
Only compression	3	15·8
Only lymphatic drainage	2	10·5
No lymphatic drainage, no compression	11	57·9

Side-effects and complications

Out of the 112 patients who had 349 liposuctions in total, postoperative wound infections occurred in five cases, representing an infection rate of 1·4%. All patients had received prophylactic oral antibiotics (cefpodoxime proxetil) for 3 days after surgery. In four women, postoperative erysipelas could be treated at home with further oral antibiotics; one patient with an abscess of the lower leg was treated in hospital in her home town.

In one case (0·3%), postoperative bleeding on one side occurred on the evening of surgery after removal of 5400 mL fatty tissue from hips and outer thighs. The haemoglobin level dropped from 13·2 to 8 g/dL; following oral therapy with iron and folic acid, normal values were reached again within 4 weeks. The following three liposuctions (removal of, in

Fig 3. (a) Lipoedema in a 34-year-old woman. (b) Result 3 years and 2 months after removal of 7000 mL of fatty tissue in both lower legs in one session.

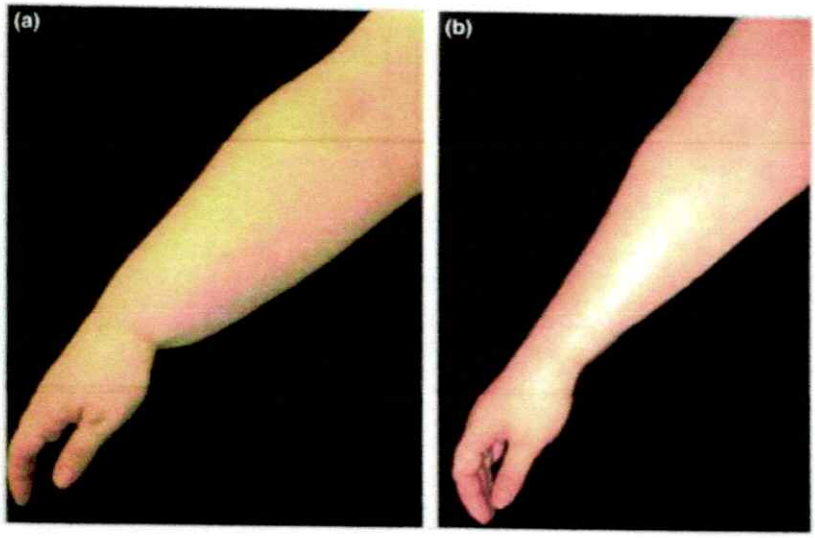

Fig 4. (a) Lipoedema in a 32-year-old woman. (b) Result 2 years and 4 months after removal of 600 mL of fatty tissue from each lower arm.

Spontaneous pain, which has previously been described in an earlier lipoedema study as being pressing and dull, sometimes as heavy, pulling or even torturing,[23] was less pronounced preoperatively (1·88) than pain attributable to pressure (2·91), both items showed a distinct improvement. Most probably, this is a result of oedema reduction (3·06 preoperative, 1·27 postoperative). Improvement of pain is well known following decongestive physical therapy. One can speculate that, following liposuction(s), oedema in the extremities is diminished because of the reduced subcutaneous space available.

The obvious reduction of bruising (3·01 before to 1·26 after surgery) has not been described before and cannot be explained. However, similar results have been published following decongestive physiotherapy of lipoedema; they have been interpreted as an improvement of the altered capillary fragility, resulting in a reduction of petechiae and thereby causing reduced haematoma formation following minor trauma.[24]

A more physiological movement was noticed after liposuction. This was attributable to reduced skin irritation at the inner side of the thighs, resulting in a more balanced gait. In addition, several patients have reported a reduction of chronic joint pains in the hips and/or knees, probably as a result of a more physiological strain on these joints; similar observations have just been published in another German study.[25]

The improvement of cosmetic impairment is a direct result of the new, and now normal, body proportions of the patients. Interestingly, in spite of all the painful symptoms, the outward appearance had an enormous negative influence (3·33 before surgery) on the patients' self-esteem. This demonstrates the marked effect of body shape on the well-being of female patients. The increase in quality of life is probably attributable to the improvement of all complaints taken as a whole; it is also a result of the reduction of conservative therapy, mentioned below.

Although differential analysis showed similar good results in all age groups with every life period being well suited for surgery, differences were seen when looking at the severity of the disease. Patients with lipoedema stage II (and III) showed

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a more distinct improvement compared with those at stage I. Hence, the more complaints were present before surgery, the more benefits were gained afterwards. Strikingly, this success prevailed over the following years indicating no or little deterioration of these symptoms with time. This is an obvious difference from the short-term success of oedema reduction by conservative therapy, which usually has to be repeated within days.

Decongestive physical therapy is a basic treatment in orthostatic oedema. Whereas manual lymphatic drainage reduces the actual oedema volume, compression (by stockings or bandages) is used to prevent reoccurrence. Although 19·4% of our patients needed conservative therapy to the same extent as before, the remainder required less, with 22·4% no longer needing conservative treatment over the following years.

This demonstrates the long-lasting positive 'side-effect' of liposuction on the associated complaints. Despite the treatment having no direct influence on the swelling of legs and arms (oedema itself cannot be removed by liposuction), the indirect benefit by 'space reduction' of the subcutaneous areas is obvious.

Nevertheless, surgery cannot cure lipoedema completely; according to the persisting oedema formation, physiotherapy and compression are still necessary in most patients, although at longer intervals and to a much lower degree. The postoperative infection rate of 1·4% seen here is similar to that of other studies in which rates between 1% and 3% are described.[26,27]

The application of TLA and the usage of blunt microcannulas avoids damage to important structures, and bleeding is rare;[16,28] a significant reduction of haemoglobin level (in our study, 0·3% of the patients) has been reported in the literature in 0·2–0·6% of cases.[21,28] However, we should mention that the patient with postoperative bleeding in our study was the only one that we saw in a total of 1826 liposuctions within the past 10 years, representing a complication rate of 0·05%.

No serious or life-threatening events occurred during our study. In agreement with others,[16,21] we can confirm that liposuction with exclusively TLA according to the existing guidelines is a safe procedure with no serious and only a few minor side-effects. We should finally mention that, in contrast to conservative therapy, the costs for this surgical treatment are not reimbursed in most cases by the statutory health insurance in Germany.

In conclusion, tumescent liposuction in lipoedema is a highly effective method with long-term benefit concerning body shape, together with a significant improvement of pain, oedema, bruising and restriction of movement. The obvious reduction in the need for further conservative treatment and the remarkable increase in the quality of life are important positive aspects of this therapy. Because often large amounts of TLA solution are needed and extensive volumes of subcutaneous fat have to be removed, a considerable degree of experience is required; therefore, the procedure should be performed in specialized centres only.

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