CASE STUDY

Obesity and Gastric By-Pass: An Adjunctive Treatment Modality

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Obesity is often a critical component in the development of lower extremity edema. Typically the following combine to cause swelling in the legs:
1. Increased pressure within the venous system leading to increased venous leakage distally;
2. Progressive failure of the lymphatics due to dynamic insufficiency and subsequently an inadequate transport capacity (of lymph fluid);
3. Mechanical obstruction from a pendulous abdomen compressing the nerves and blood vessels in the thighs. All three contribute to lower extremity edema, and are associated with venous insufficiency and stasis ulcers.

The following is a report of a patient who successfully utilized gastric by-pass as part of her management of lower extremity lymphedema. The patient was first seen in July of 2004. She had progressive swelling in her lower extremities for four years, skin ulcers on both legs, and had experienced six to eight episodes of cellulitis. On her first visit to this author’s office, she had another bout of cellulitis and was treated with oral antibiotics with complete resolution of her symptoms.

The patient was five feet tall and 290 pounds (BMI 56). Her past medical history included bi-lateral club feet with multiple surgical interventions in childhood, diabetes, peripheral neuropathy, osteoarthritis, hypertension, and elevated cholesterol. A previous workup had been negative for DVT (deep vein thrombosis), but did show some femoral vein reflux in her right leg.

The patient lived alone, and had been disabled for two years. Previously, she worked in special education. She denied smoking or drinking alcohol.

The body habitus of the patient prevented her from reaching her feet. She relied upon friends and family members to help her with bandage changes to the wounds on her legs and management of her lower extremities. She had been prescribed a three chamber sequential compression pump previously; however the patient was unable to don the device and used it rarely.

After discussion of treatment options, it was decided that she would benefit most from an inpatient rehab stay. She was admitted to the rehabilitation hospital and was seen by physical therapy and occupational therapy on a daily basis for two weeks for CDT (Complete Decongestive Therapy), aquatic therapy and conditioning exercises. Throughout her stay, she was seen and counseled by the dietitian on a weight loss and diet.

At discharge, she had a 3.5% reduction in volume in her left leg and a 4.5% reduction in her right leg. Due to difficulties taking her stockings on and off, she was fitted with Class 1 knee high garments and instructed to wear two pairs of these stockings during the day and to bandage at night. A friend was instructed in compression bandaging techniques and bandaged her nightly. In addition, her compression pump was refurbished with new compression sleeves containing multiple sequential chambers and she was instructed on proper use. She was given menus at discharge and an exercise program to help her with weight loss.

At her follow-up visit, the patient had lost two pounds. Her measurements revealed that she had additional, substantial, loss of edema. She reported that her legs were far more comfortable and she had had no episodes of cellulitis and no open, draining wounds on her legs. The importance of weight loss was reiterated and an appropriate diet and aerobic conditioning exercises were recommended. Despite these measures, the patient had minimal success with weight loss. She was stable at her next visit three months later, but confessed that she was unable to tolerate the compression stockings and was using tubi-grip instead. Weight loss in the management of lower extremity edema was again emphasized.
Subsequent to the follow up visit in March 2005 the patient had a right knee replacement. The surgeon allowed the leg to have compression bandages applied immediately post operatively. The patient did well with no peri-operative infection or exacerbation of her lymphedema. Unfortunately, shortly after her knee replacement, she fell, fracturing her right humerus (she was unable to get up and lay helpless for hours until friends were able to get her to the ER). After surgery to repair her humerus, she decided to undergo gastric by-pass surgery to reduce her weight, to regain mobility, and have better control of her lymphedema.

She was next seen in the clinic approximately a year and a half after undergoing gastric by-pass and had lost 135 pounds. With this dramatic reduction in her weight, the patient had almost no edema in her lower extremities. Weight had come off of her abdomen and she no longer had a pendulous lower abdomen that compressed her legs when sitting. The measurements in her lower extremities were reduced from 8 to 20 centimeters in circumference at every measurement point. She had not experienced any episodes of cellulitis in the last one and one-half years. She reported that the pain in her legs was markedly improved. Additionally, her diabetes was now controlled with diet; she no longer required medications for her hypertension or cholesterol. Her weight at a follow-up visit was 186 pounds.

After her weight loss, the patient returned to work part-time as a special education teacher. Over the next couple of years, she was able to maintain her legs with intermittent compression bandaging at night, occasional garment wear, and risk reduction techniques to prevent cellulitis. She has had no recurrent infections and has maintained a busy active schedule.

In April of this year, the patient injured her left knee in a fall. With the injury, she was more immobile and gained 14 pounds which resulted in increased lymphedema. She eventually underwent a left total knee arthroplasty. Post-operatively, compression bandages were applied immediately in the operating room by trained therapists. She was then transferred to the rehabilitation hospital for inpatient post-op rehab and management of her lymphedema. After daily CDT for 10 days, she was fitted with appropriate compression garments. She lost 10 pounds during her hospitalization. With the weight loss and increase in her mobility and function, she was able to don and doff the new stockings easily. She is now maintaining her bilateral lower extremity edema with daily knee high compression garments, night time bandaging and occasional sequential compression pumping.

Prior to the gastric by-pass surgery, this patient’s BMI was greater than 56. With the gastric by-pass, the patient had a BMI of 36. This author’s experience has been that when a patient’s BMI exceeds 45, it becomes very difficult to achieve weight loss. The obesity becomes immobilizing hampering the individual from participating in exercise that will aid in weight loss. For this patient, the gastric by-pass and resultant weight loss provided an enormous improvement in quality of life and reduced the frequency of life threatening episodes of cellulitis. She also had improvement in the management of her venous edema and lymphedema, and multiple other medical issues including her diabetes, hypertension, and hyperlipidemia. Although gastric by-pass must be used judiciously, there can be an adjunctive role for gastric by-pass or lap band surgery in patients with lymphedema.