

## Lymphedema

### **A Review and Case Profiles**

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Lymphedema of the extremities remains a therapeutic challenge. As a result, many therapies have been devised but none have produced superior outcomes. Two types of lymphedema occur, primary and secondary.

Primary lymphedema is rare resulting from a congenital abnormality of the lymphatic system. Secondary lymphedema is the most common form and results from the interruption or obstruction of the lymphatic channels. Secondary lymphedema may be categorized as acute or chronic. The acute type is generally secondary to trauma and is easily resolved by conventional methods. The chronic version is a more vexing condition, generally only minimally improved by technologies currently in use, with recurrence when therapy ceases. Most frequently chronic lymphedema occurs post-mastectomy and following a variety of other surgical procedures that involve disruption of the lymphatic channels and nodes. It also occurs secondary to congestive heart failure, chronic liver disease, thrombophlebitis and gravitational dependency.

#### Etiology

Acute	Chronic
Trauma Surgery Burns	Thrombophlebitis Congestive Cardiac Failure Immobilization Dependency Post Radiation Renal Failure Hepatic Disease Parasitic Infections Genetic

## **Mechanism & Physiology**

Edema of the extremities and other anatomical regions results from the abnormal collection of fluids and proteins in the superficial connective tissues. These substances have not been absorbed by the lymphatic system. Their composition consists of transudate from the cells or exudate from the lymphatic and vascular channels. Duration varies from days to years. Chronic lymphedema is characterized by firm induration and cyanosis as arterial compression progresses.

## **Conventional Therapies**

1. Elevation of extremity above level of heart
2. Variety of compression techniques
  - a. Pumps
  - b. Bandages
  - c. Fitted garments
3. Manual Procedures
  - a. Massage
  - b. Compression

It should be noted that there is no effective drug therapy. Diuretics are frequently utilized but not recommended for long term use. The above listed conventional therapies do not provide any long term solutions. Outcomes are usually limited at best and require prolonged periods of treatment without permanent relief or cure.

## **Case Profile #1**

- 80 year old male.

### **Duration**

- 3 to 4 years. Progressive in nature.

### **Etiological Factors**

- Post harvesting long saphenous vein (coronary bypass procedure)
- Gravitational dependency
- Recurrent congestive heart failure

### **Findings**

- Initially affected extremity diameter mid-calf 6 cm greater than opposite side
- Firm non-pitting induration
- Moderate cyanosis
- Poor venous filling
- No arterial pulse distal to femoral pulse palpable

### **Treatment**

- 10 one-hour sessions over four week period utilizing Bioflex Low Intensity Laser Therapy System

### **Outcome**

#### ***Objective***

- Mid-calf diameter same as opposite member
- Resolution of cyanosis and induration
- Restoration of venous filling and peripheral arterial pulses
- Normal skin temperature

#### ***Subjective***

- Absence of sensation of heaviness, chronic aching
- Activity level restored to normal

No regression or recurrence four months post-cessation of treatment.

## **Case Profile #2**

- 58 year old female
- Liver transplant in 1986 precipitated by hepatitis and hepatic failure

### **Diagnosis**

- Chronic lymphedema of left lower extremity with accompanying cellulitis

### **Etiology**

- Thrombophlebitis of deep veins
- Anti-rejection medications
- Hypoalbuminemia
- Dependency

### **Findings**

- Initially right leg mid-calf – 35 cm
- Left leg – 43 cm

### **Treatment**

- 9 one-hour sessions over three weeks using Bioflex Low Intensity Laser Therapy System in circumferential manner

### **Outcome**

- Left leg mid-calf – 38 cm
- Cellulitis 90% resolved without antibiotics

(Note - At this time patient moved away and is continuing treatment at another facility using the Bioflex system.)

Please see Attached Photo

# Case Profile #1



**Diagnosis:** Chronic Lymphedema right lower extremity  
**10 treatments 1 hour each utilizing the Bioflex (L.I.L.T.) System**

**History:** 81 year old male. Symptoms progressive over 3 years. Induration severe with cyanosis.  
Diameter of mid-calf 6cm > opposite side.



**Initial:**  
Cyanosis – marked, Induration – severe  
No peripheral arterial pulse palpable  
Poor venous filling  
6cm mid-calf diameter increase  
compared to left



**Interim:**  
After 4 treatments



**Final:**  
After 10 treatments  
Cyanosis and induration gone  
Good venous filling  
Mid-calf diameter same as left

# Case Profile #2

**Diagnosis:** Chronic Lymphedema / Cellulitis left lower extremity  
**9 treatments 1 hour each utilizing the Bioflex (L.I.L.T.) System**



**Initial:** Before treatment  
Lympeidema / Cellulitis



**Interim:** After 3 treatments



After 9 treatments mid-calf diameter  
diminished: 5cms

## **Discussion**

Surface treatment arrays are applied in circumferential fashion to affected areas. In these instances only local therapy was utilized. Frequently in these situations arterial circulation may be compromised. In order to relieve this and enhance reduction of the edema, Low Intensity Laser Therapy may also be applied to the appropriate dermatomes of the spinal column, resulting in a sympathectomy-type effect. We utilize this technique in the resolution of edema in both the upper and lower extremities. This procedure speeds up resolution of the condition and ensuing complications.

## **Conclusion**

It is apparent that Low Intensity Laser Therapy is the treatment of choice in both acute and chronic lymphedema. Notwithstanding duration of the condition, response is invariably rapid with total elimination of the condition in four weeks or less. We strongly recommend the utilization of the Bioflex Low Intensity Laser Therapy System for treating all cases of lymphedema.

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