Compression Pump Studies - Lymphedema

Overview of Treatment Options and Review of the Current Role and Use of Compression Garments, Intermittent Pump and Exercise in the Management of Lymphedema
By Michael J. Brennan, MD and Linda T. Miller, PT

Background:
Lymphedema is a relatively frequent complication following the management of breast carcinoma. Numerous therapeutic interventions have been offered to treat this potentially disabling and disfiguring condition. Consensus has not been attained among oncologist, surgeons, psychiatrists, and physical therapists concerning the appropriate treatment of lymphedema.

Methods:
The prescription and use of intermittent pneumatic pumps has been the mainstay of lymphedema therapy in the United States for many years. It continues to be a reimbursed therapy for lymphedema by federal and third party payors. Several controlled studies have documented their usefulness in the treatment of this condition, thereby supporting their continued use.

Results:
A review of available literature suggests that a variety of traditional and commonly available techniques when used appropriately in a multidisciplinary fashion may lessen the cosmetic and physical impairments associated with acquired lymphedema. The role of surgery is unclear. Pharmacotherapies are a promising adjunct to manual and mechanical therapies.

Conclusion:
The appropriate use of readily available treatment approaches may lessen the severity of acquired lymphedema following breast carcinoma therapy. A comprehensive therapeutic approach should be employed in the management of lymphedema including attention to the functional, cosmetic, and emotional sequelae of this potentially disabling condition. To that end a recommendation for a comprehensive treatment regimen is provided. Cancer 1998;83.2821-7.

Lymphedema Following the Surgical Treatment of Breast Cancer: A Review of Pathophysiology and Treatment
By, Michael J. Brennan, MD
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Abstract:
Lymphedema is often accepted as an inevitable and untreatable common consequence of breast cancer management. There has been little investigation of its Pathophysiology, but reasonable hypotheses can be elaborated based on the known physiology of lymph production and removal. Both diagnosis and treatment remain largely empirical. A large clinical experience suggests that outcome is best with a multidisciplinary team approach that is based in an outpatient setting and combines gradient compression garments, sequential pneumatic pumps and ancillary support services. Through this program, a majority of patients see greater than 50% reduction in their lymphedema. J. Pain Symptom Manage 1992;7:110-116

Conclusion:
Lymphedema is a common and distressing complication of breast cancer therapy. Its cause is unclear but probably relates principally to iatrogenic interruption of normal lymphatic outflow. Associated biochemical and cellular phenomena lead to fibrosis and the accumulation of proteinaceous substances in the tissues. Diagnosis is primarily clinical, although imaging techniques such as lymphscintigraphy may provide a safe and effective means to assess the lymphatic system when other measures are needed. Tonometry may prove to be beneficial in screening patients postoperatively. Comprehensive management should begin early with the use of compression garments and sequential intermittent pneumatic compression devices.
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Intermittent Compression for Lymphedema of Arm
By, T.J. McNair, L.M. Martin and J.D. Orr
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Abstract:
Swollen arms resulting from carcinoma of the breast or its treatment by surgery or radiotherapy can be greatly benefited by the use of intermittent compression devices such as are used for prophylaxis against deep venous thrombosis in the legs. The benefits are both objective and subjective but the latter are so striking that the treatment should be offered to all affected patient for a trial period.

Conclusion:
The use of intermittent compression pumps and pneumatic sleeves gives improvement in patients with swollen arms following carcinoma of the breast or its treatment: for such patients the medical profession has had little to offer in the past. The delight of the majority of patients leaves little doubt about the efficacy of the method and this can be confirmed by objective measurements. This treatment could be available in every physiotherapy department at little cost and home treatment should be considered.

Effect of Treatment with Elastic Sleeve an Intermittent Pneumatic Compression in Post Mastectomy Patients with Lymphoedema of the Arm
By Iwona Swedborg
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Abstract:
In an attempt to reduce edema of the arm after mastectomy, patients were provided with an elastic sleeve which was worn for a period of between 1 week and up to 6 months. A statistically significant mean relative decrease of 17% in the volume of edema was achieved. Subsequent treatment by intermittent pneumatic compression for 10 days produced a further significant mean relative decrease of 18%. When the sleeve was worn for 6 month after this treatment there was not significant increase in arm volume – that is, no relapse.

Conclusion:
The study has shown that a marked reduction of the arm edema can be obtained solely with the elastic compression sleeve, when worn for a fairly long time. Subsequent intermittent pneumatic compression therapy can produce a further considerable decrease in volume within a short time. For patients who are much troubled by the edema it would seem best to begin with IPC therapy. For those who are less affected, the sleeve therapy alone may suffice, since the form of treatment too, is beneficial in the long run.

In order to maintain the beneficial effect of the IPC therapy it is essential to follow it up by applying the elastic compression sleeve.