

Review

## Godoy & Godoy technique in the treatment of lymphedema for under-privileged populations

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### Abstract

The aim of this paper is to report new options in the treatment of lymphedema for under-privileged populations. Several articles and books have been published reporting recent advances and contributions. A new technique of manual lymph drainage, mechanisms of compression, development of active and passive exercising apparatuses and the adaptation of myolymphokinetic activities have been developed for the treatment of lymphedema. This novel approach can be adapted for the treatment of lymphedema in mass.

Key words: lymphedema, filariasis, treatment

### Introduction

The treatment of lymphedema continues to be a worldwide challenge for modern medicine due to the characteristics of the disease. Lymphedema generally affects poor populations, there is no cure and there are few therapeutic prospects involving the private sector. This situation is aggravated in less developed countries where a lack of government resources and of specialized health workers has led to the marginalization of the disease.

Thus there is an urgent need to develop alternative, low cost therapies that are efficacious, provide a certain amount of independence for the patient in respect to treatment and that present easy-to-maintain results. With the objective of developing new options for poor populations, Godoy & Godoy started to develop and evaluate new therapeutic alternatives for the treatment of lymphedema.

### Godoy & Godoy's novel approach to the treatment of lymphedema

Over the last few years, Godoy & Godoy have developed a novel approach to the treatment of lymphedema aimed at under-privileged populations. This has allowed the creation of centers with simple-to-use, low-cost and efficacious therapy often involving adaptations to existing forms of treatment. This research involved new techniques of manual lymph drainage<sup>1-3</sup>, passive exercises using electromechanical apparatuses<sup>4-7</sup>, myolymphokinetic activities<sup>8,9</sup>, precautions in personal hygiene<sup>10</sup>, aspects of nutrition, psychological aspects<sup>11</sup>, interdisciplinary and multidisciplinary approaches, new mechanisms of compression therapy<sup>12,13</sup> and the development of apparatuses to facilitate active myolymphokinetic exercises<sup>14,15</sup>.

## Godoy & Godoy technique of manual lymph drainage

The development of this new technique of manual lymph drainage provides a simple and efficacious treatment option<sup>1-3</sup>. This technique aims at draining lymph (already in the collectors) and stimulating the formation of lymph (the flow of interstitial fluid to the lymphatic capillaries). Increases in interstitial pressures, caused by compression exerted by the hands on the skin which are slid along the route of the lymphatic vessels, promotes the formation of lymph. Thus, using the principles of hydrodynamics, physiology, physiopathology and anatomy, a new concept of lymph drainage was established which is reproducible in vitro, in vivo and in the clinical practice.

### Cervical stimulation

Studies show that cervical stimulation performed in isolation leads to a reduction in the lymphedema<sup>16,17</sup>. This therapy in isolation has been used to treat face lymphedema caused by trauma, oncology surgery involving the dissection of lymph nodes of the neck and plastic surgery; a reduction in edema of the face and extremities was seen after using this technique for 15 to 20 minutes with the results being evident after from 24 to 72 hours<sup>16</sup>. A demonstrative video can be accessed in the internet site: [www.drenagemlinfatica.com.br](http://www.drenagemlinfatica.com.br)<sup>18</sup>. Cervical stimulation is the only type of stimulation used in published lymph drainage techniques that has been evaluated in isolation and proven to be efficacious in the reduction of the edema. The hypothesis of the mechanism of action is that cervical stimulation causes the contraction of the lymphangions.

### Passive mechanical lymph drainage

Passive mechanical lymph drainage has provided a true revolution in the treatment of lymphedema of both the arms and legs, with a concept of intense lymphedema treatment. Electromechanical devices can be used to produce passive flexion and stretching movements.

One such device, the RAGodoy® apparatus<sup>4-7</sup> was developed for the treatment of the lower extremities by producing dorsoflexion of the foot and allows treatment sessions of 8 hours or more daily with losses of as much as 20 cm in circumference and more than 10 kg (32% to 100% of the lymphedema) being seen in five-day treatment programs<sup>19</sup> (*Intensive Treatment of leg lymphedema in the outpatients "clinic" in press Indian Journal Dermatology 2010*). This form of intensive treatment is carried out in association with manual lymph drainage and compression therapy.

Another RAGodoy® passive device was specifically developed for the arms and can reduce edema by 100 mL in a 60-minute treatment period<sup>20</sup>. This apparatus passively performs flexion and stretching movements of the elbow.

### Active exercising devices

A series of active exercising devices were developed thereby enabling the creation of a laboratory of apparatuses for the treatment of lymphedema<sup>14,15</sup>. All these devices are used associated with compression mechanisms and were created after a pilot study which evaluated variations in working pressures of the main groups of muscles of the limbs whilst using compression mechanisms during exercising. This is a new line of research that aims at developing facilitating devices which can be used in the control of exercising. Eight devices have been developed that involve the main muscle groups with the objective of improving the mobility of joints and reducing trophic muscle.

### Myolymphokinetic Activities

Myolymphokinetic activities are day-to-day activities, such as brushing the floor, that involve the mobility of the limb and can be transformed into a form of treatment. Several studies, both ongoing and in press, show that the association of these activities with compression mechanisms maintain losses achieved during lymph drainage<sup>8,9</sup>. First, the working pressures of the main muscle groups of the arms were assessed and then myolymphokinetic activities, common to the patient's occupation, were adapted and transformed as an associated lymphedema treatment, that is, compression with myolymphokinetic activities<sup>12</sup>. It is possible that women during their work, by associating these compression mechanisms which they are able to dress and take off alone or with the help of a member of the family, can experience a reduction in the lymphedema. Adaptation of many types of chores enables these patients to return to a productive life. Guidance, adaptations and supervision when performing these activities are necessary for this form of treatment until the patients are aware of the precautions they need to take.

Another line of research is related to myolymphokinetic exercises; there is a scarcity of publications on this subject in the world literature. The authors conclude that myolymphokinetic exercises, as with myolymphokinetic activities, can reduce or increase edema depending on how they are performed. Exercising leads to greater energy consumption of the muscles and consequently to greater capillary filtration and an increase in lymphovenous drainage.

When more filtration occurs than lymph drainage, the size of the limb increases and when the drainage is greater, the limb size will reduce. All exercising and muscle activity can stimulate venolymphatic return due to external compression on the vessels; the authors suggest the use of the term 'myolymphokinetic therapy' when these activities or exercises result in a volumetric reduction of the limb. These exercises are specific and require knowledge of the venous and lymphatic anatomy and physiology.

Continuous guidance and evaluation of patients are required. The authors recommend that each patient is assessed individually for each of the exercises proposed. For this evaluation, volumetry by water displacement should be used as this examination is simple, cheap and feasible in any community. Control of the volumetry of limbs is fundamental and should be performed on a daily basis during intensive treatment and at differing intervals depending on each patient during non-intensive treatment. This control is essential to evaluate the evolution of the patient and serves to ensure that the patient is complying with the proposed treatment.

Exercises and activities require an additional blood supply to the muscles depending on the force used and the repetition of movements over prolonged periods of time; this can lead to an increase in the edema. Thus activities with little resistance, with movements that demand a low blood supply to the limbs, are essential. These rules must be followed with patients being individually counseled about all types of movement. The same activity can increase or decrease the volume of the limb depending on several factors such as, for example, the weight and the fitness of the patient and the duration of exercises.

### Compression mechanism

One of the most important weapons in the treatment of lymphedema is compression however technical difficulties, specialized professionals and the specific materials used are limitations in the treatment. Alternatives were sought to simplify and reduce the cost both of the material and the use of this mechanism. The utilization of a low-cost cotton-polyester material, known in Brazil as *gorgurão*, enabled the creation of a compression mechanism that patients themselves can dress or take off in less than one minute for hygiene and other reasons. This is a revolution in the treatment of lymphedema, as apart from its practicability the cost is low for under-privileged populations. Several styles have been developed for the compression of the arms, legs and the scrotum<sup>12,13</sup>. However, although the cost is low, it is necessary to train a seamstress to manufacture and

correctly adapt the garment for each limb. Another important aspect is the necessity of constantly adjusting the garment as intensive treatment can reduce the lymphedema by 4 or more centimeters in circumference per day. For these patients, the compression garment utilizes Velcro to facilitate constant adjustments throughout the day. In non-intensive treatment, first Velcro is employed and after hooks and eyelets or a zipper are used, however constant adjustments are still required because of the reductions in the size of the limb. Because of this need of constant adjustments, we noticed that treatment centers require the services of a professional seamstress. Even so, many patients have been trained to produce their own compression stockings, sleeves or gloves. The use of these compression mechanisms gives a certain independence of patients allowing them to return to their daily activities.

### Interdisciplinary team

Another important aspect is the patient's adhesion to treatment with the solutions being to work with an interdisciplinary team and for the patient to see significant results. Success mostly depends on the results of treatment and so to achieve these objectives adaptation and the development of new forms of treatment are necessary. This team is composed of the lymphologist or professional trained in the treatment of lymphedema, psychologists, nutritionists, occupational therapists, physiotherapists, a seamstress to make the compression stockings and social assistants. In the evaluations of the patients, the multidisciplinary team is also important in the development of research<sup>21-31</sup>.

### Suggestion for treatment

The suggestion for treatment of under-privileged populations is the creation of specialized treatment centers supported by the government. However, the main difficulty in creating these centers is sufficiently trained healthcare professionals, which is the limiting factor of the project. No center can exist without significant results and for this reason there is a necessity of specialists. With this in mind Godoy & Godoy have set up a model center for the treatment and research of lymphedema with excellent results attending the necessities of patients from distant localities. This option of simple and feasible treatment can change the lives of millions of people who are unable to work worldwide.

### Conflict of Interest

The authors have declared that no conflict of in-

terest exists.

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