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Contribution of the Godoy Method® to Treat Breast Cancer-Related Lymphedema Running Head: Godoy Method and Breast Cancer

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ABSTRACT

Background: Lymphedema of the arm and chest is one complication of breast cancer treatment. It brings yet another challenge to patients and professionals responsible for their rehabilitation. The study aims to show advances in the treatment of lymphedema using this Godoy technique and your evaluation.

Development studies: In recent years, new concepts and contributions to the treatment of breast cancer-related lymphedema have evolved, including the Godoy method. The Godoy method has many facets: new drainage techniques adapted to treat lymphedema after breast cancer treatment, new concepts such as an intensive form of treatment, mechanical lymphatic drainage equipment, new materials for making compression sleeves, a line of research associated with exercises and occupational activities, evaluation of psychological aspects, and the creation of multidisciplinary therapeutic groups.

Conclusion: In summary, a set of innovations that improve therapeutic outcomes. This review identifies the fundamental principles of Godoy's method intervention studies for the treatment of lymphedema, ensuring their clinical relevance and providing practicing clinicians not only with a better understanding but also with the ability to implement them in their own studies.

Keywords: Godoy Method, lymphedema, breast cancer, multidisciplinary, evaluation, treatment.

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INTRODUCTION

Lymphedema is a clinical condition that leads to the retention of macromolecules and fluids and changes in extracellular matrix proteins, consequently, resulting in both physical and psychological discomfort [1,2]. Among the leading causes of lymphedema is breast cancer treatment, yet another consequence of this disease [3,4].

The treatment of secondary lymphedema after breast cancer treatment has been a challenge for decades. It remains without a cure, but research has evolved, and satisfactory results can be achieved, making it possible to maintain the limb within or close to a normal size [5-8]. Every development in medical treatment requires research, the results of which must be at least as effective as, or even better than, what already exists. Thus, researchers are continually seeking more effective alternatives.

The Godoy® Method has evolved over recent years, identifying new concepts and new outcomes, always seeking to adapt to the reality of the daily lives of patients, thereby allowing the normalization of edema [9]. The most significant advances in the treatment of lymphedema using this technique have been demonstrated by biopsies, both before and after clinical normalization of lymphedema, showing that the Godoy method improves the mobilization of macromolecules, reduces edema, and significantly contributes to changes in extracellular matrix proteins [1,2]. In this way, the technique provides new, important information for those seeking the normalization or almost normalization of edematous limbs. Although lymphedema has no cure, following the proposed treatment program can help maintain any reduced limb volume for years [10].

The first development of the method began when the author, a vascular surgeon, based on his knowledge of anatomy, confirmed that the lymphatic vessels are linear and that lymphatic drainage must follow the direction of these vessels. Hence, a new concept of lymphatic drainage based on linear movements along the direction of the vessels towards the corresponding lymph nodes was born. This method was evaluated as monotherapy for one month and then over the long term for three years [11-13].

This was the first innovation in relation to manual lymphatic drainage; however, upon analyzing the process of breast cancer treatment, it is observed that the lymph nodes are frequently resected and vessels cauterized, making drainage through these collectors impossible. Nevertheless, this does not limit lymph production. The consequence is increased pressure in associated collectors, causing hypertensive lymphedema in both the ipsilateral arm and hemithorax [14]. Therefore, any technique that attempts to drain through these collectors can cause more harm than good.

Given this pathophysiological basis, the authors sought to identify an alternative, one being to identify lymphatic vessels that do not flow to the axilla where axillary node clearance occurred; the cephalic and posterior chains are the two that can be drained linearly [15]. Even though some collectors that flow to the axillary lymph nodes may remain intact, the majority of collectors in this region are blocked and hypertensive. Therefore any attempt to drain can further increase pressure in the collectors and be more harmful than beneficial [15]. That being said, only two chains can be drained linearly.

An alternative manner to drain the region of lymphatic collectors obstructed by treatment is to perform intermittent manual compression, that is, displacement over short distances, thereby avoiding pressure increases in collectors that are blocked. Therefore, we developed a lymphatic drainage technique adapted to the pathophysiology of post-breast cancer lymphedema treatment, which was accompanied by a study to evaluate drainage through each of the chains as monotherapy; drainage using this approach proved to be effective [15].

Another option that emerged was the development of an electromechanical device, RAGodoy®, based on passive limb flexion and extension exercises. A series of studies carried out proved that, as monotherapy, passive exercises reduce the volume of edematous limbs [16-18]. This device was adapted to be used intensively for several hours a day; currently, it is used for up to 8 hours a day with some patients. In this way, the concept of intensive lymphedema treatment for 4-8 hours/day was created, allowing a reduction of around 50% in the volume of edema of some patients within the first five days [6,7].

A further significant contribution was the development of handmade medical stockings and sleeves that can be adjusted as necessary using a textile called grosgrain. In the case of intensive treatment, the reduction is so significant that sleeves need to be adjusted once or twice a day [18-23]. However, if these sleeves are not available, any available sleeves can be used; in this case, I suggest using *Circaid* sleeves that are continuously adjusted for intensive treatment. A well-adjusted compression mechanism associated with carefully directed daily living activities will be the future of treatment. As patients themselves can modify the 'grosgrain' sleeves, a continuous reduction of edema is possible with a certain independence from treatment [23].

To carry out an intensive form of lymphedema treatment, it is essential to combine 6-8 hours per day of the RAGodoy™ electromechanical device with continuous use of a compression mechanism adjusted daily until the arm size returns to normal. I recommend continuing treatment after the arm size is normal, using good-quality elastic sleeves. Furthermore, it is essential to guide patients regarding activities of daily living [24]. A study evaluating eight types of activities of daily living associated with the 'grosgrain' compression sleeve, together with guidance on how to carry out these activities, showed that it is possible to transform everyday activities into occupational myolymphokinetic exercises that reduce edema [24]. This concept was used to create a line of research that showed it is possible to treat women with post-breast cancer lymphedema using self-adjusted compression mechanisms associated with careful

daily life activities [23, 24].

Another contribution is cervical stimulation or cervical lymphatic therapy, which consists of light stroking using the finger (around 30 times per minute) in the supraclavicular region for around 15 to 20 minutes. By indirect assessment, research has demonstrated the efficacy of this method as monotherapy, with a possible hypothesis of action at the parasympathetic nervous system level. This technique is routinely used in our patients. In particular, this stimulus is used as monotherapy in the treatment of congenital lymphedema in children [25-27].

Based on the information above, we developed a method to reduce edema quickly, as many of our patients live in distant places, even in other countries. Thus, an intensive treatment of 4-8 hours a day was conceived, which can reduce the volume by around 50% in the first week, 60-70% in the second week, and more than 80% in the third week, depending on the degree and type of lymphedema [6]. We do not cure lymphedema, but we continue treatment until the reduction is approximately 100% of the volume and maintain the results, thereafter, allowing flexibility in this maintenance. There may be an increase in volume during some periods, but the size normalizes with additional treatment.

Given all the complications that post-breast cancer treatment women face, we identified that occupational and emotional circumstances are as important as the physical aspects. Hence, a transdisciplinary team was established in the service to support two groups of approximately 20 patients, who attend for around three hours per day, once a week. The transdisciplinary approach involves doctors, physiotherapists, occupational therapists, psychologists, and other professionals who encourage participants to pursue any type of hobby, such as painting and dancing, that they consider to be beneficial. They decide what they want to do in terms of their pastime [28-30].

The psychological aspect is fundamental in treating patients, as anxiety is one of their main problems within society. This aspect was evaluated, and an improvement, albeit insignificant, was observed with the transdisciplinary approach [31]; however, a significant reduction in depression was also noted [32]. In the immediate postoperative period, these patients had difficulties with hygiene; this was improved when they were given guidance on the best way to perform this task [33].

Some patients require specialized assistance, such as those who have lost mobility due to neurological damage. In these cases, specific alterations are made to treatment using daily passive exercises (RAGodoy) associated with a compression mechanism to reduce the effects of treatment to near normal levels. Then the patient can maintain these improvements in their own homes [34].

Pain, including phantom pain, was a significant complication in these women [35,36]; however, with the reduced surgical aggression in recent years, such as sentinel lymph node evaluation, there has been a reduction in complaints. The lack of information from professionals regarding these manifestations was always common.

Prevention of erysipelas is essential [36, 37] as is the prevention of other aggravating factors such as trauma, incorrect exercising, and obesity [38-42]. In the early stage of lymphedema, drugs such as diosmin and hesperidin can be useful [43].

Regarding the chest, the possibility of subclinical or clinical lymphedema was detected by multisegmented bioimpedance [44]. An observation of a mastologist regarding some techniques is that with axillary emptying during breast cancer treatment, hypertensive lymphedema will develop in the ipsilateral hemithorax, and any lymphatic drainage maneuver can cause greater injury. Based on these reports, we developed a new concept for treating chest lymphedema. This technique consists of very gentle stroking movements that significantly reduce edema. However, the pressure exerted must be very low, otherwise further injury may result. In this approach, professionals must be guided to confirm their results [45].

In summary, over the years, a series of scientific investigations have been carried out, changing the evolution and outcome of lymphedema treatment compared to previous forms of therapy.

DECLARATIONS

Conflict of Interest and Financial Support

The authors declared no financial support but have a conflict of interest because they created this method.

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