

Effects of manual therapy techniques in the treatment of pain in post mastectomy patients: systematic review.

Efeitos das técnicas de terapia manual no tratamento da dor em pacientes pós mastectomizadas: revisão sistemática.

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Abstract

Introduction: Cancer is now the third leading cause of death in the world, surpassed only by cardiovascular accidents and deaths by external causes, among them stands mammary carcinoma. Mastectomy is in a procedure consisting of invasive breast removal due to some anatomical and functional changes previously diagnosed. With the growth of the disease and its high content in increasingly young women, Manual Therapy has been used as a new form of treatment. **Objective:** To show the effects of manual therapy in patients after mastectomy surgery. **Method:** This is a systematic review in which secondary and tertiary sources were used, and the databases PubMed, Medline, Lilacs and SciELO were used. It was adopted as inclusion criteria studies classified as: a randomized controlled trial, with publication period between 2009 and 2013. Were used as search terms: "Mastectomy", "Neck", "Shoulder Pain", "Musculoskeletal Manipulations" and "Functionality". **Results:** Among the 37 initially selected by electronic search in the databases of articles, 25 were excluded for the title did not meet the inclusion criteria. Of the 12 retained studies, 5 were excluded for duplicity. Seven studies were selected for a more thorough analysis through summary, 2 of them being excluded. The remaining 5 articles were evaluated from reading the text. It can be seen that the manual therapy techniques have significant results in the alleviation of muscle pain in patients submitted to surgery mastectomy. **Conclusion:** It can be seen that the manual therapy techniques have significant results in the alleviation of muscle pain in patients undergoing the mastectomy surgery. However, there is still a lack of studies of type randomized controlled trial on the effects of manual therapy in patients in the post-operative period of mastectomy.

Keywords: Mastectomy; Neck, Musculoskeletal Manipulations

Resumo

Introdução: O câncer é hoje a terceira causa de óbitos no mundo, apenas superado pelos acidentes cardiovasculares e pelas mortes por causas externas, dentre eles destaca-se o carcinoma mamário. A mastectomia trata-se de um procedimento constituído da retirada invasiva da mama em virtude de alguma alteração anátomo-funcional previamente diagnosticada. Com o crescimento da doença e seu alto índice em mulheres cada vez mais jovens, a Terapia Manual vem sendo usada como uma nova forma de tratamento. **Objetivo:** Mostrar a efeitos da terapia manual em pacientes após cirurgia de mastectomia. **Método:** Trata-se de um estudo de revisão sistemática, no qual foram utilizadas fontes secundárias e terciárias, utilizando as bases de dados de Pubmed, Medline, Scielo e Lilacs. Foi adotado como critérios de inclusão estudos classificados como: ensaio clínico controlado randomizado, com período de publicação entre 2009 e 2013. Foram utilizados como termos de busca: "Mastectomia", "Cervicalgia", "Dor de Ombro", "Manipulações Musculoesqueléticas" e "Funcionalidade". **Resultados:** Entre 37 dos artigos inicialmente selecionados pela busca eletrônica nas bases de dados, 25 foram excluídos pelo título por não atenderem aos critérios de inclusão. Dos 12 estudos retidos, 5 foram excluídos por duplicidade. Foram selecionados 7 estudos para uma análise mais criteriosa por meio do resumo, sendo 2 deles excluídos. Os 5 artigos restantes, foram avaliados a partir da leitura do texto. Pode-se observar que as técnicas de terapia manual apresentam resultados significativos no alívio da dor muscular em pacientes submetidas ao a cirurgia de mastectomia. **Conclusão:** Pode-se observar que as técnicas de terapia manual apresentam resultados significativos no alívio da dor muscular em pacientes submetidas ao a cirurgia de mastectomia. No entanto, ainda existe uma grande escassez de estudos do tipo ensaio clínico controlado randomizado sobre os efeitos da terapia manual em pacientes no PO de cirurgia de mastectomia. **Palavras-chave:** Mastectomia; Cervicalgia; Manipulações Musculoesqueléticas

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INTRODUCTION

Cancer is now the third leading cause of death in the world, surpassed only by cardiovascular accidents and deaths by external causes, among them stands mammary carcinoma. Relatively rare before age 35, above this age group the incidence is growing fast and steadily, but the statistics indicate both increasing incidence in developed countries as in developing. According to estimates, in Brazil, 49,240 new cases of breast cancer are registered and the most common among women and accounting for 22% of new cases each year, with relatively good prognosis in cases where takes place the proper treatment. Mortality rates remain high, with a value of 11,860, with 11,735 women and 125 men, most likely because the disease is still diagnosed in advanced stages.⁽¹⁾

Among the methods of therapeutic surgery is highlighted, and the greater the delay, the greater the likelihood of postoperative complications.⁽²⁾ Surgical treatment ranges from lumpectomy to mastectomy, with or without removal of axillary lymph nodes. Axillary lymphadenectomy (AL) is most often used for disease staging, guidance on the criteria of choice of adjuvant therapy and prognosis. Additionally, there may be employed adjuvant and/or neoadjuvant chemotherapy (CT) manner, radiotherapy (RT), and hormone therapy.⁽³⁾

The most frequent complications presented after mastectomy are: pain, lymphedema of the upper limb ipsilateral to surgery, decreased range of motion (ROM), limited to 90° of flexion, abduction and external rotation to 40° of shoulder and postural changes, especially in vertebral and scapular region column, and may present a high body posture changed with shoulder internally rotated and protruding. The elevated and abducted scapula, increased thoracic kyphosis and cervical lordosis, forward head and slight rotation of the trunk, and a structural scoliosis. In valgus knees and hips come in external rotation with abnormal gait, these factors exacerbate postural imbalances.⁽⁴⁾

Complications associated with radiotherapy are: breast and axillary fibrosis, joint restriction of glenohumeral and scapular waist, neuropathy, chronic pain in the breast region, the scar adherence, plexopathy and fatigue. Among those related to chemotherapy are: fatigue, ataxia and neurotoxicity.⁽⁵⁾

The presence of these complications can compromise the quality of life (QOL) of these women, because it interferes negatively in their daily lives, restricts the execution of physical, industrial and domestic activities, beyond the emotional impact and personal relationships.⁽⁶⁾

In parallel to the clinical treatment of breast cancer, physical therapy plays an important role in the multidisciplinary approach to these patients, working in the pre and early and late postoperative period, treating func-

tional recovery from early to prevent complications, favoring the return to activity daily life, and improving quality of life. However, we question how best to perform these exercises and their influence on postoperative complications.⁽⁷⁾

Therapeutic approaches of manual therapy include the use of simple muscle stretching, post-isometric relaxation, reciprocal inhibition, slow exhalation, eye movements, pressure release trigger point massage, range of motion, heat, ultrasound, galvanic stimulation of high voltage, drug treatment and biofeedback.⁽⁸⁾ Notably, anxiety and pain as well as shoulder capsular approaches may favor the onset of dysfunction and myofascial trigger point formation in mastectomy patients.⁽⁹⁾

Due to the high rate of breast cancer, come to affect women at an increasingly younger age group generating physical, social and emotional changes, the manual therapy is being increasingly used as a new form of treatment.

METHODS

It is a systematic review study in which secondary and third sources were used, on the databases PubMed, Medline, Lilacs and SciELO. Among the 42 initially selected by electronic search in databases articles, 30 were excluded for the title did not meet the inclusion criteria. Retained the 12 studies, 5 were excluded for duplicity. Seven studies were selected for a more thorough analysis through summary, three of them being excluded. The remaining four articles were evaluated from reading the text, as shown in Figure 1.

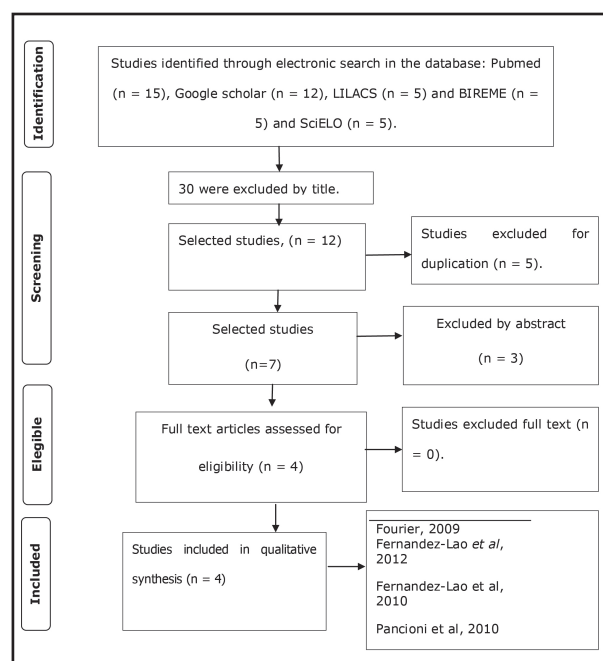


Figure 1. Search and selection of studies for systematic review.

RESULTS

Table 1 shows the characteristics of the populations of different studies by examining the following variables: gender, number of volunteers, age, lifestyle and adiposity region.

Table 2 presents the results of the intervention and the procedures performed in different studies.

Table 3 presents the methods of assessment and intervention procedures used in these studies.

In table 4 we verify the results of each study and its conclusions.

DISCUSSION

It can be observed that there is a small amount of controlled clinical trial and randomized trial to assess

the effect of manual therapy techniques for the treatment of pain in the shoulder and cervical regions of patients after mastectomy surgery. Clinical trials are experimental studies applied to human, aimed at testing the effects of certain techniques, behaviors or medications. These studies are controlled because they have a control group without intervention so that you can compare the intervention applied and thus able to verify that the effects are displayed consequent application or if they result from random errors. Randomization is by random separation between subject groups studied in the execution of the research. Among the various study designs that would become the model for the real experimental verification of the results of an intervention method.⁽¹⁰⁾

The realization of controlled clinical trials in hu-

Table 01. Population Characteristics of the different studies.

Study	Clinical Signs post surgery	Population	Age
Fourier, 2009	Pain, joint dysfunction and reduction of shoulder ROM.	18 volunteers	45 a 68 years
Fernandez-Lao et al, 2012	Pain and Trigger Point in the major and minor pectoral muscle, infraspinatus, scalene, sternocleidomastoid and upper trapezius.	32 volunteers	32 a 65 years
Fernandez-Lao et al, 2010	Pain in the neck, shoulder and axillary. Trigger point of the scalene muscles, pectoralis major, pectoralis minor, levator scapular, suboccipital and trapezius.	29 volunteers	32 a 65 years
Pancioni et al, 2010	Patients had pain and muscle shortening in the cervical region.	19 patients	40 a 75 years

Source: Research Data

Table 02. Intervention modalities and procedure of clinical trials found.

Study	Intervention	Procedures
Fourier, 2009	Manuels maneuvers soft tissue mobilizations. / Release Muscle / Fascial Release.	Four weeks of treatment. Realization of manual maneuvers in areas of adhesion and deficit of ROM after mastectomy surgery, patients in the first 6 months of postoperatively.
Fernandez-Lao et al, 2012	Maneuvers myofascial release of the muscles in the shoulder area and scalene.	Four weeks of treatment. Perform the maneuvers myofascial release of the muscles in the shoulder area and scalene after mastectomy surgery.
Fernandez-Lao et al, 2010	Maneuvers myofascial release in the upper trapezius muscle, sternocleidomastoid, levator scapula, suboccipital, scalene, infraspinatus and pectoralis major was performed.	Five weeks of treatment. Performing maneuvers myofascial release in the muscles of the neck and shoulder after mastectomy surgery.
Pancioni et al, 2010	Inhibition Muscular Technique, Stretching and Muscle Energy Technique were performed.	Ten sessions, twice a week for 50 minutes, totalizing five weeks of treatment.

Source: Research Data

Table 03. Methodological characteristics of the study (Evaluation and procedure).

Study	Type of study	Methods of Assessment	Number of sessions / Treatment Time	Follow-up	Data Analysis
Fourier, 2009	Experimental	Evaluation of analog pain scale and range of motion.	4 weeks	-	-
Fernandez-Lao et al, 2012	Experimental	Palpation and evaluation of analog pain scale.	4 weeks	-	-
Fernandez-Lao et al, 2010	Experimental	Evaluation of analog pain scale and digital algometry.	4 weeks	-	-
Pancioni et al, 2010	Almost experimental	Evaluation of analog pain scale and the McGill questionnaire.	5 weeks	-	-

Source: Research Data

Table 04. Clinical Results and Study Conclusions

Study	Results	Conclusion
Fourier, 2009	Decreased pain, ROM improved.	It was observed the effectiveness of manual therapy techniques in recovering the dysfunction of the shoulder joints.
Fernandez-Lao <i>et al</i> , 2012	Decrease of pain in the shoulder and neck region.	We observed the effectiveness of myofascial release techniques on pain in the shoulder and neck.
Fernandez-Lao <i>et al</i> , 2010	Decrease of pain.	Decrease of pain in the muscles of the cervical region.
Pancioni <i>et al</i> , 2010	Significant reduction in pain trigger points and according to the McGill questionnaire.	The study concludes that the Manual Therapy Technical, were effective in reducing myofascial pain in women with mastectomies.

Source: Research Data

mans is extremely important for scientific research, but the realization of this type of study requires a higher level of difficulty, since the idealized pattern formation evaluation requires a high scientific rigor.

Few randomized controlled trials have been conducted in manual therapy treatments, so few guidelines can guide therapeutic approaches for the treatment of cervical brachial pain. All these studies have used a drawing with methodological flaws. Although numerous guidelines that were developed around the world, there is a scarce data describing the actual effects of manual therapies in post-mastectomy patients.⁽¹¹⁾

All studies used as evaluation method to quantify pain Visual Analog Scale of Pain (VAS), which consists of a horizontal line of 10 cm in length, and the ends indications: no pain, corresponding to zero at left and maximum pain corresponding to 10 at right.⁽¹²⁾

In addition to these questionnaires the McGill Pain Questionnaire (MPQ), which was prepared in 1975 by Melzack at McGill University in Montreal, Canada, with the objective of providing qualitative measures of pain that can be analyzed statistically was used. This is one of the most referenced worldwide and used in clinical practice. The MPQ assesses the sensory, affective, temporal and miscellaneous pain qualities. In addition, features within its scope an evaluation of spatial distribution and intensity of pain ("no pain" to "excruciating"). There is great evidence of validity, reliability and discriminative ability of the MPQ when used with young adults.⁽¹³⁾ Other questionnaires could also have been used, so it is recommended to use the Functional Index Oswestry adapted to neck pain, this scale consists of sections that refer to activities of daily living, which may be interrupted or curtailed.

In clinical analysis of studies found it was observed an improvement in the level of pain in the neck and shoulder of all patients undergoing procedures and manual therapy techniques. Thus it can be seen that the manual maneuvering of therapy have an important effect in pain relief when compared to the conservative treatment with conventional therapy. Note the improvement in pain symptoms, however for best evidence of these effects is needed-more controlled clinical trials

with a larger number of patients in different groups of different ages and different risk groups.⁽¹⁴⁾

Breast cancer is a complex disease with ways to slow or rapidly progressive. It is a systemic disease, involving multiple organs.⁽¹⁵⁾ One of the major clinical effects found in postoperative mastectomy surgeries is myofascial dysfunction, characterized by a painful condition characterized by the presence of palpable nodules, called trigger points, which account to an external pressure forced or muscle recruitment with radiated pain.⁽¹⁶⁾

The trigger points are small and sensitive areas of the muscle, spontaneously or upon compression, causing pain in a region known as distant area of referred pain.⁽¹⁷⁾ The therapeutic manual therapy approaches include the use of single muscle stretching, relaxation postisometric, reciprocal inhibition, slow exhalation, eye movement, release pressure and trigger point massage different maneuvers.⁽¹⁸⁾

Results obtained in this study it can be concluded that manual therapy was effective in reducing myofascial pain in mastectomy contributing to improve the quality of life of these women.

The manual therapy has developed continuously from the contributions of many doctors and researchers. It is an instrument of therapy that aims to harmonize the musculoskeletal system, whose principles include techniques that approximate muscle origin and insertion passively. Its main feature is the specific positioning of body segments in order to relieve the pain of sensitive points, which can arise in any somatic tissue such as muscles, fascia, ligaments, tendons, joint capsule, sincondroses, cranial sutures, periosteum and bone. These points can be identified through palpation in the form of small nodules (from 0.25 to 1.0 cm), usually located in the subcutaneous tissue, fascia or muscle tissue, causing tissue irritation, muscle tension and pain. Thus, the purpose of the manual therapy is to benefit the patient in relieving pain and muscle spasms.⁽¹⁹⁾

There are hypothesis that the technique works favoring the balance of tone, it seems to affect the inappropriate proprioceptive activity; normalization of fascial tension, occurring a relaxing action of tissue; decreased hypomobility joint, due to the relaxation of mus-

cles and fasciae affected tissue; improving circulation and reducing edema due to relaxation of the musculoskeletal structures; reduction of pain in response to relieve spasm; increased strength and, since the technique restores the normal tone and function of the muscles involved.⁽²⁰⁾

Physiotherapy has various manual techniques may provide pain relief, restoring structural and functional properties of the fabric, and may also affect the fluid flow, reducing the structural obstructions within the tissue. These techniques have proven quite satisfactory and immediate results in pain relief in patients with neck pain.⁽²⁰⁾

Thus it can be seen that the manual therapy maneuvering have a significant effect in relieving pain in muscles trigger points.⁽¹⁴⁾ Two of the possible explanations for the reduction of pain through manual techniques, it is believed that the hypertonic muscle relaxation muscle groups in the shoulder stabilizers reduces muscle spasm. During the application of the technique is an adaptation of the muscle spindle and allows the Golgi tendon organ to adapt the voltage fluctuation. So after the maneuver we can see an adaptation of the neural components of muscle which promotes a reduction of muscle spasm.⁽¹¹⁾

There is a reduction of articular and peri-articular adhesions, which limit the ROM, generates hypomobility and cause pain. During the maneuver the reduced tissue tension, promotes stretching of the capsule and causes the disruption of the adhered tissue, freeing the movement and reducing pain.⁽¹¹⁾

The kinesiotherapy isolated and its association with MT were equally beneficial to the recovery of ROM and

functionality of upper limbs in women undergoing surgery for breast cancer, and this benefit was maintained over 18 months of follow up.⁽²¹⁾

The injuries to the soft tissues (muscles, tendons, ligaments, joint capsule, articular surface, skin and fascia) are often treated by manual therapy. The normal tissue remodeling and regeneration depend upon mechanical stimulation during the repair process. The MT is directed to restore the arthrokinematics movements, such as the slide, rotate and scroll. When performed in small amplitude produces slip or drift in the joint. Graduated Joint mobilization and performed early in the ROM aims to treat pain through activation of neural structures; while the mobilization applied to the end of the range favors the lengthening of the tissue. In addition, joint mobilization techniques and deep massage can also stimulate proprioception, favoring the movement.⁽²⁴⁾

It is suggested by this study to make further controlled and randomized clinical trials in order to better support the use of manual therapy techniques in the treatment of neck and shoulder pain, moreover, propose to undertake studies in different groups of people. Thus providing greater guidance for clinical practice, facilitating the promotion of health.

CONCLUSION

It can be observed that the manual therapy techniques have significant results in relieving the muscle pain in patients submitted to surgery for mastectomy. However, there is still a lack of studies of type randomized controlled trial on the effects of manual therapy in patients in the postoperative period of mastectomy.

REFERENCES

1. INCA. Instituto Nacional de Câncer. Estimativa 2010: Incidência de câncer no Brasil; 2010 Disponível em: <http://www2.inca.gov.br/wps/wcm/connect/tiposdecancer/site/home/mama>
2. Petito EL, Nazário ACP, Martinelli SE, Facina G, Gutiérrez MGR. Application of a domicile-based exercise program for shoulder rehabilitation after breast cancer surgery. *Revista Latino-Americana de Enfermagem* 2012;20(1).
3. Rett MT, Mesquita PJ, Mendonça ARC, Moura DP, Santana JM. A cinesioterapia reduz a dor no membro superior de mulheres submetidas à mastectomia ou quadrantectomia. *Revista dor* 2012;13(3).
4. Hack LF. Análise do comportamento motor de uma paciente submetida à mastectomia radical. *Revista Brasileira em Promoção da Saúde* 2009;22(1):61-65.
5. Leites GT, Knorst MR, Lima CHL, Zerwes FP, Frison VB. Fisioterapia em oncologia mamária: qualidade de vida e evolução clínico funcional. *Revista Ciência & Saúde* 2010;3(1):14-21.
6. Silva MD, Rett MT, Mendonça ACR, Júnior WMS, Prado VM, Santana JM. Qualidade de Vida e Movimento do Ombro no Pós-Operatório de Câncer de Mama: um Enfoque da Fisioterapia. *Revista brasileira de cancerologia*. 2013;59(3):419-426.
7. Freitas Júnior R, Ribeiro LfJ, Taia L, Kajita D, Fernandes MV, Queiroz GS. Linfedema em Pacientes Submetidas à Mastectomia Radical Modificada. *Revista Brasileira de Ginecologia e Obstetrícia* 2001;23(4).
8. Simons DG, Travelli JG, Mons SL. Dor e disfunção miofascial: manual dos pontos Gatilhos. 2.ed. Porto Alegre: ArtMed, 2005.
9. Cheville AL, Tchou J. Barriers to rehabilitation following surgery for primary breast cancer. *J Surg Oncol*. 2007;95(5):409-18.

10. Reis FB, Ciconelli RM, Faloppa F. Pesquisa científica: a importância da metodologia. *Rev Bras Ortop* 2002;37(3).
11. Evans DW. Mechanisms and effects of spinal high- velocity, low-amplitude thrust manipulation: previous theories. *Journal of Manipulative and Physiological Therapeutics*. HVLA Thrust Manipulation. May 2002.
12. Masselli MR, Fregonesi CEPT, Faria CRS, Bezerra MIS, Junges D, Nishioka TH. Índice funcional de oswestry após cirurgia para descompressão de raízes nervosas. *Fisioterapia em Movimento* 2007;20(1):115-122.
13. Santos CC, Pereira LSM, Resende MA, Magno F, Aguiar V. Aplicação da versão brasileira do questionário de dor McGill em idosos com dor crônica. *ACTA FISIATR* 2006;13(2):75-82.
14. Karason AB, Drysdale P. Somatovisceral response following osteopathic hvlat: a pilot study on the effect of unilateral lumbosacral high-velocity lowamplitude thrust technique on the cutaneous blood flow in the lower limb. *Journal of Manipulative and Physiological Therapeutics*. 2003;26(4):221.
15. Faria L. As práticas do cuidar na oncologia: a experiência da fisioterapia em pacientes com câncer de mama. *História, ciências, saúde-manguinhos*. 2010;17.
16. Borg-Stein J, Simons DG. Focused Review: Myofascial pain. *Archives of Physical Medicine and Rehabilitation* 2002;83:S40-S47.
17. Wolfe F, Smythe HA, Yunus MB, Bennett RM, Bombardier C, Goldenberg DL, et al. The american college of rheumatology 1990. Criteria for classification of fibromyalgia. Report of the multicenter criteria committee. *Arthritis & Rheumatism*, New York, v.33, p.160-72, 1990.
18. Simons DG, Mense S. Diagnosis and therapy of myofacial trigger points. *Shmerz Journal* 2003;17(6):419-424.
19. Freitas JR, Ribeiro LFJ, Taia L, Kajita D, Fernandes MV, Queiroz GS. Linfedema em pacientes submetidas à mastectomia radical modificada. *Rev Bras Ginecol Obstet*. 2001;23(4):205-8.
20. Morelli JGS, Rebelatto JR. A eficácia da terapia manual em indivíduos cefaleicos portadores e não-portadores de degeneração cervical: análise de seis casos. *Rev Bras Fisioter* 2007;11(4):325-9.
21. Pettman E. A history of manipulative therapy. *The Journal of Manual & Manipulative Therapy*. 2007;15(3):165-74.
22. Senbursa G, Baltaci G, Atay A. Comparison of conservative treatment with and without manual physical therapy for patients with shoulder impingement syndrome: a prospective, randomized clinical Trial. *Knee Surg Sports Traumatol Arthrosc*. 2007;15:915-21.
23. Colby LA. Exercícios terapêuticos fundamentos e técnicas. 3º edição, São Paulo: Manole LTDA, 1998:180-229.
24. Hoving JL, Vet HC, Koes BW, Mameren H, Devillé WL, Van Der Windt D, et al. Manual therapy, physical therapy, or continued care by the general practitioner for patients with neck pain: long-term results from a pragmatic randomized clinical trial. *Clin J Pain* 2006;22(4):370-7.