14 - EPIDEMIOLOGIC STUDY: INCIDENCE AND COMPLICATIONS OF TRANSFEMORAL AMPUTATION OF VASCULAR CAUSE

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INTRODUCTION

According to Carvalho (2003), amputation is a word derived from Latin, meaning the complete or partial removal of one or more limbs of the body, and the amputations of limbs can happen due to etiologies related to vascular, neuropathic, traumatic, tumoral, infectious and congenital processes.

According to Souza et. al. (2004), it is important for the patients to be aware of the procedures that were taken during the amputation, because they are measures of restoration and not mutilation, making important the professional's work involved in the rehabilitation of the patients, encouraging them to reach their recovery.

The incidence of amputation in the USA is estimated to be 4.9 amputees per 1000 born alive babies, while the incidence for those over 65 years old is four times as high (FERNANDES, 2007). In Brazil, the incidence is estimated to be 13.9 per 100,000 inhabitants/year (SPICHLER et al.,2001).

The amputations are classified according to the place of their occurrence, for the lower limbs the main types are: partial amputation of feet, transtibial, disarticulation of knees, transfemoral, disarticulation of hips and hemipelvictomy (BOCCOLINI, 2000). The transfemoral amputation refers to the whole amputation between the knee and hip articulation (CARVALHO, 2003). It can be divided in transfemoral amputation in proximal, medium and distal third (BOCCOLINI, 2000).

The most frequent causes of amputations are due to the peripherical arterial insufficiency, mellitus diabetes and its complications, severe infections, traumas, neoplasia and congenital deformities (PASTRE, 2005). Among the vascular diseases, the peripherical obliterant arteriosclerosis is the main one related to the amputations; this disease presents irreversible risk factors, such as aging, and reversible risk factors which are able to be observed, such as systemic arterial hypertension, mellitus diabetes, dislipdemy, tabagism, obesity and sedentarism. The control in diabetic patients has been suggested as a protector and preventive factor concerning the development of artheriosclerosis (BRITO, 2003).

For Fernandes (2007), the highest incidence of amputations occurs for the vascular diseases (75% of the causes in lower limbs) followed by the traumas (20%) and tumors (5%). For upper limbs (MMSS), the highest cause factor is the labor accidents. When the amputations occur due to vascular disorders the highest cause factor is the thromboangiitis obliterants that leads to a necrosis, initially distal, with slow evolution and progressive for the proximal region.

The amputations of lower limbs caused by vascular peripherical diseases commit mainly middle aged patients, who are vulnerable to degenerative diseases such as artheriosclerosis (CARVALHO, 2003). According to Fernandes (2007), the peripherical vascular diseases can be associated with diabetes, and this fact is responsible for 59% of amputations. As for this age group, in younger patients with vascular diseases, the fact that is responsible for the amputation of vascular cause is the thromboangiitis obliterants. For the upper limbs, the main cause are the labor accidents and when they occur because of vascular disorders, it is also due to thromboangiitis obliterants that leads to a necrosis, initially distal, with slow evolution and progressive to the proximal region.

According to Fernandes (2007), diabetic patients with peripherical neuropathies have progressive loss of touch and proprioceptive sense. It leads to a higher risk of hard tissues, ulcers and infections. When there is infection with a decline of blood stream there can be gangrene, in case the treatment has been inefficient, the patient will have to cut off the limb. With the progression of the disease, there is the impairment of big arteries, with artheriosclerosis, in this one the ischemia can arouse, making the transfemoral amputation level be more severe.

For O'Sullivan (1993), the earlier the beginning of the rehabilitation, the more successful it will be, and the later the beginning, the higher the probability of secondary complication development such as articulation contractures, general debilitation and a depressive psychological state. According to Friedmann (1994) apud Brito (2005), the main causes of complications after the amputation in the stump are: edema, sutures, phantom pain, stump ulcers, swelling, infections, scaring retraction, neuromas and bone espicules. These kinds of problems usually affect the stump in the second or third week after the surgery. The problems originated from neuromas, muscle contractures and hypotrophy, among others, happen later; and the pain can hardly occur at any time, presenting several characteristics.

The aim of this study was to identify and quantify the incidence, as well as the main complications associated with the transfemoral amputation of vascular cause.

METHODOLOGY

This research is a field study, with epidemiologic, evaluative, quantitative, and transversal cut. The study was composed by 31 patients from FAG's Integrated Clinics in Cascavel- Paraná, with transfemoral amputation, regardless the age and sex. The pattern of study was composed by 17 patients who fulfilled the criteria adopted in the research, which were: be a patient of FAG's Rehabilitation Care Center, presenting transfemoral amputation of vascular cause, regardless the sex, having the person's permission to apply the questionnaire through the awareness term paper, willing to participate in the research. The data acquisition was taken through a questionnaire composed by 31 questions, 8 subjective ones and 23 objective ones. The questionnaires were applied from Mondays to Thursdays in the morning, from April 07th to April 30th . The data collect was accomplished by four university students who were graduating in the Physiotherapy course, who interviewed individually the patients in order to clarify possible doubts of the interviewees. The interviews were accomplished after the signature of the awareness term paper. The data were collected and tabled in a statistical descriptive form, making use of the SPSS program, version 15.0, and then they were discussed.

RESULTS AND DISCUSSION

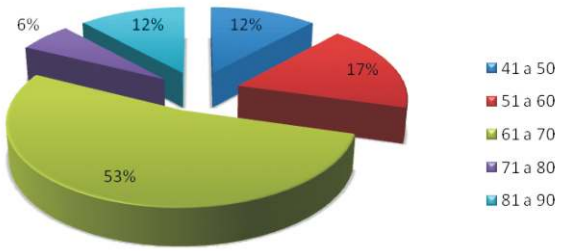
According to Carvalho (2003), in the amputations of lower limbs, we can find etiologies concerning vascular, neuropathic, traumatic, tumoral, infectious, congenital and iatrogenic processes. Following the literature, the most important amputation is the vascular one, not only for men but also for women (MILLER, 2001). According to Lianza (2001), the vascular disease is considered the main cause of ending amputations, like the lower limbs, the same result was observed in the study made

by Cassefo (2003), in which the distribution of the etiology of amputation was: 59.2% vascular; 24% traumatic; 5.3% tumoral; 5% infectious; 3,1% congenital; 1,1% others and 2.3% not mentioned. That could also be confirmed in this study, where 54.8% of the interviewees presented amputation of vascular cause, 29% traumatic, 6.5% tumoral, 3.2% infectious, 3.2% neuropathic and 3.2% congenital ones.

It was observed that from the 17 participants, 76.5% of them were men and 23.5% were women. Nissen (1992) mentions the prevalence of men in his/her studies, varying from 71% to 88%, in agreement with our studies. The same result was observed in the study accomplished by Diogo (2003), where 75% of the patients were men and only 25% of them were women.

The amputation of lower limbs caused by peripherical vascular diseases commit mainly middle aged patients, who are more vulnerable to degenerative diseases like artheriosclerosis (CARVALHO, 2003). It can be observed that there is an increase of the incidence of amputations as one gets older, being significantly considered more frequent in the group whose patients were over 60 years old (VAN HOUTUM, 1996). For Agne et al (2004), the average age also varied according to the amputation cause, with an elevated rate in the vascular and/or infectious diseases, whose average age was 67.4 years old. In the study accomplished by Cassefo (2003), the average age for vascular cause was 58.27 years old, which is lower than the average age found by this research, as it is presented below, 53% of the transfemoral amputees of vascular cause are between 61 and 70 years old, these results are in agreement with other results pointed by other research. (GRAPHIC 1).

GRAPHIC 1: The relation between age and amputation.



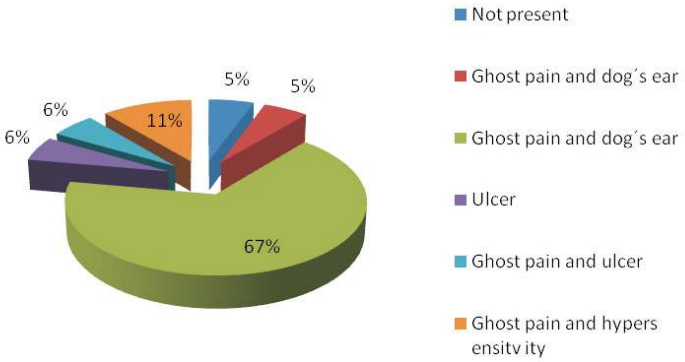
As for the side of the amputation in the interviewees of vascular cause, it was found 52.9% to the right side, 41.2% to the left and 5,9% bilateral. In the study of Spichler (2004), it was 48.5% to the left and 51.5% to the right. Around 85% of all amputations are made in the lower limbs, however the number of amputations is equal for both sides (PALMER E TOMS, 1988).

The amputees of vascular cause who present alterations and complications in the stump are 89%, which can be seen in graphic 2. The main complication identified in the research is the phantom pain, which can arouse either in an isolated way or associated with another complication. Although this phenomenon is studied a lot, but not very known, in which the patient experiences an unpleasant sensation in the limb or in the part that was removed. The incidence found in several studies varies from 2% up to 97%, and the pain usually arouses in the first week after the amputation, and remains for months and sometimes years. It is normally located distally in the phantom limb (toes, feet and calf) and it is referred as a tight sensation (SAKAMOTO, 1995). In this study, the isolated phantom pain was responsible for 67% of alterations, and it also aroused together with hypersensitivity (11%), with ulcer presence (6%), with dog's ear (5%), adding up to 89% of the sample.

The relationship between pain and injury seems to be so evident that, even in the real absence of the injury, it is not believed in the possibility of pain, or in the absence of the limb, it is believed in the arousing of pain. The term “pain” is commonly used in two different criteria which are up to a certain point divergent. The first refers to a system of nerve terminations in the outskirts of the body, which are activated by adequate stimuli; send out signals to the dorsal medulla or to a specific area in the brain. The second uses the cognitive and emotional system and behavioral actions, occurring subsequently and nociceptive stimulation generally regarded as emotions, responses or actions (TICIANELI and BARAÚNA, 2002).

The phantom pain is produced by the absence of nerve impulses of the limb. When the nerve is cut, it produces a strong injury discharge in all types of fibers. This excitement reduces quickly and the cut nerve becomes silent, until new nerve terminals start to grow. It shows that the central nervous system realizes the absence of normal inflowing, thus, some amputees feel such a little pain or hardly ever feel it, that do not mention the painful feeling when questioned about the pain, while others suffer pain with a higher frequency. (DEBASTIANE, 2005).

GRAPHIC 2: Alterations found in stump of amputees of vascular cause.

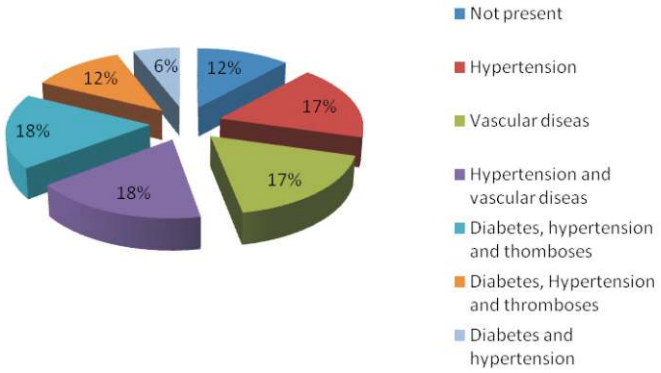


The diseases that can be associated with amputation of vascular cause, in its majority, are linked to vascular diseases, as it can be seen in GRAPHIC 3. For Seidel (2008), the most prevalent co-morbid situations in the amputation cases due to vascular diseases were: systemic arterial hypertension (66%), mellitus diabetes (DM) (60%), tabagism (59%), renal insufficiency (11%) cardiac arrhythmia (0,9%).

The systemic arterial hypertension (SAY) is already regarded as a risk, because one of its consequences in the long run is the hypertensive ulcer, which can become an infection and then an amputation (DE GODOY, 2005). In this study, it was observed that the systemic arterial hypertension in an isolated way, commits 17% of the interviewees, and it is also associated with other three diseases: systemic arterial hypertension and vascular disease 18%, systemic arterial hypertension, mellitus diabetes and thromboses 12%, and SAY and mellitus diabetes 6%, analyzing this data, it can be affirmed that the hypertension is associated with the amputation of vascular cause in 53%. When the comparison is made to know the percentage of patients with vascular disease, it

is known, in an isolated way that it affects 17% of the amputees, associated with SAY has18%, with mellitus diabetes more 18%, it means that 53 % of these patients present some type of vascular disease.

GRAPHIC 3: Associated Diseases with transfemoral amputationof vascular cause.



The tabagism associated with amputation is well reported, especially with diabetes mellitus. It is a fact that the chances of amputing a foot of a smoking diabetic person are higher. However if the patient is able to stop smoking the risks are reduced along the time (GRAVES, 2001). In the research of Seidel (2009), 59% of the patients were smokers or ex-smokers. In this study, the rate was even lower, being 35.3% smokers or ex-smokers. Even so, it must be pointed out the importance of this habit, because the diabetes associated with tabagism increases the chances of amputation, as mentioned previously.

CONCLUSION

After analyzing and discussing the data, it was observed, as it is shown in literature, that the incidence of transfemoral amputation of vascular cause is more frequent, responsible for 54.8% of amputations, and men were predominant in the research in 76.5%. As for the age, the average age of 64 years old was higher than it was observed in the literature. The complication in the stump with higher incidence was the phantom pain in 70.6%, and as for the associated diseases, the vascular diseases and hypertension were predominant.

It can also be concluded through this research that the amputation is a rising area, as discussed previously, and because of this fact, the importance of having more studies, mainly in relation to the prevention is evident. In this study, it was shown that the vascular diseases and hypertension are associated with amputation, so if they are prevented, they can minimize the incidence of amputations.

BIBLIOGRAFIA

AGNE, J.E., et al., **Identificação das causas de amputação de membros no Hospital Universitário de Santa Maria.** Revista Saúde, 2004.

BOCCOLINI, F., **Reabilitação:** Amputados, Amputações e Próteses. São Paulo: Editora Robe, 2ªEd, São Paulo, 2000.

BRITO, C.M.M. **Reabilitação de Amputados de Membros Inferiores – Epidemiologia e Apresentação de Casos Clínicos:** Aspectos Funcionais e Abordagem Terapêutica. Congresso de Telefisiatria, 2003. Disponível em www.cbtms.com.br. Acesso em: 15/011/08.

BRITO, D.D., ISERNHAGEN, F.C., DEPIERI, T.Z., **Tratamento fisioterapêutico ambulatorial em pacientes submetidos à amputação transfemoral unilateral por acidente motociclístico: Estudo de caso.** Arquivo Ciência Saúde Unipar, Umoaram, 2005.

CASSEFO, V., NACARATTO, D.C., CHAMLIAN, T.R., **Perfil epidemiológico dos pacientes amputados do Lar Escola São Francisco – estudo comparativo de 3 períodos diferentes.** Acta Fisiátrica, 2003

DEBASTIANI, J.C., **Avaliação do equilíbrio e funcionalidade em indivíduos com amputação de membro inferior protetizados e reabilitados.** Monografias do Curso de Fisioterapia da Unioeste, 2005.

DE GODOY, J.M. et al. **Lower-extremity amputation:** a 6-year follow-up study in Brazil. J Orthop Surg (Hong Kong), 2005. DIOGO, M. J. D. Satisfação global com a vida e determinados domínios entre idosos com amputação de membros inferiores, **Rev. Panamericana del Salud Publica/Pan Am Journal Public Health**, 13 (6), 2003.

FERNANDES, A.C. et al**, AADC- Medicina e Reabilitação**: Princípios e Prática. São Paulo: Artes Médicas, 2007.

FRIEDMANN, L. W. **Reabilitação do amputado de membro inferior.** 4ª Ed. São Paulo: Manole, 1994.

GRAVES, J.W., MORRIS, J.C., SHEPS, S.G. **Martorell"s hypertensive leg ulcer**: case report and concise review of the literature. J Hum Hypertens. 2001.

LIANZA, S. **Medicina de Reabilitação**. 3ª ed. Rio de Janeiro: Guanabara Koogan, 2001.

MILLER, W C, ET AL. **The influence of falling, and balance confidence on prosthetic mobility and social activity among individuals with a lower extremith amputation.** Arch Phys Med Rehabil 2001.

NISSEN, S.J., NEWMAN, W.P., **Factors influencing reintegration to normal living after amputation.** Arch Phys Med Rehabil 1992.

O'SULLIVAN, S.B., SCHMITZ, T.J. **Fisioterapia:** Avaliação e tratamento. 2ªEd., São Paulo: Manole, 1993.

PALMER, L.; TOMS, J. **Treinamento funcional para deficientes físicos.** 2ªEd., São Paulo: Manole, 1988.

PASTRE, C.M. **Fisioterapia e a amputação transtibial.** Arquivo Ciência e Saúde, 2005.

SAKAMOTO, H., **Dor Pós-amputação:** Abordagem Terapêutica, Acta Fisiátrica 2, 1995.

SEIDEL, A.C. et al. **Epistemologia sobre amputação e desbridamentos de membros inferiores realizados no Hospital Universitário de Maringá.** Jornal Vascular Brasileiro, 2009.

SPICHLER, E.R.S. et al. C**apture-recapture method to estimate lower extremity amputaion rates in Rio de Janeiro, Brazil.** Revista Panamericana de Salud Publica, Washington, v. 10, n. 5, 2001;

SPICHLER, D. et al, **Amputações maiores de membros inferiores por doença arterial periférica e diabetes melito no município do Rio de Janeiro.** Revista Jornal vascular brasileira, 2004; aceso em 10/08/09, disponível em: http://www.jvascbr.com.br/04-03-02/04-03-02-111/04-03-02-111.pdf

SOUZA, F.P. et al, **Fisioterapia Avaliação e Tratamento.** São Paulo: 2. ed. Manole, 2004.

TICIANELI, J. G., BARAÚNA , M. A. Teoria da neuromatrix: uma nova abordagem para o entendimento da dor fantasia, **Rev. De Fisioterapia da Universidade de São Paulo,** v. 9, n.1, p. 17-22, jan./jun., 2002.

VAN HOUTUM, WH, LAVERY, LA. **Outcomes associated with diabetes-related amputations in The Netherlands**

and in the state of California, USA. J Intern Med. 1996.

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EPIDEMIOLOGIC STUDY: INCIDENCE AND COMPLICATIONS OF TRANSFEMORAL AMPUTATION OF VASCULAR CAUSE

ABSTRACT

Amputation is a word derived from Latin, which means the complete or partial removal of a body limb from different sources such as vascular, neuropathic, traumatic, tumoral, infectious and congenital. In Brazil, the incidence of amputations is estimated to be 13.9 per 100,000 inhabitants/year and in the USA the number is 4.9 per 1000 born alive babies, while this number is four times as high when we talk about people over 65 years old. As shown in books, the vascular disorders are the main cause of amputations and several pathologies and risk factors are associated with them such as tabagism and others. This article aimed to identify the incidence, as well as the main complications related to the transfemoral amputation of vascular cause. An epidemiologic study was accomplished at FAG's integrated clinics, interviewing 31 patients after they had signed a free agreement term document, the questionnaire application was accomplished. This questionnaire was composed by 31 questions, 8 subjective ones and 23 objective ones, and it was applied during one month, and from those patients 17 were selected according to the established criteria. In the research, 54.8% of the interviewees were from vascular cause, most of them (76.5%) were middle aged men, around 64 years old and the prevailing alteration in the stump was the phantom pain (70.6%). As it was previously thought, our average numbers were similar to what can be observed in the literature.

KEY WORDS: Amputation;. Transfemoral. Vascular cause.

L'ÉTUDE EPIDEMIOLOGIQUE: L'INCIDENCE ET COMPLICATIONS DE L'AMPUTATION TRANSFÉMORAL DE CAUSE VASCULAIRE.

RÉSUMÉ

L'amputation est un mot dérivé du latin, qui signifie une coupe partielle ou totalle d'un membre du corps, en pouvant être par cause vasculaire, neuropathique, traumatique, tumorale, infectieuse et congénitale. Au Brésil, on estime que l'incidence de l'amputation est de 13,9 pour 100.000 habitants par an, et aux Etats-Unis est estimée à 4,9 amputés pour 1000 nés vivants, en étant quatre fois plus grande quand il s'agit des personnes de plus de 65 ans. Selon la littérature, la principale cause d'amputation sont les problèmes vasculaires et à eux sont liés plusieurs autres maladies et facteurs de risque comme le tabagisme et d'autres.Cet article a eu l'objectif de identifier l'incidence et les principales complications liées à l'amputation transfémoral de cause vasculaire. Nous avons effectué une étude épidémiologique dans les cliniques intégrées de la FAG (Faculté Assis Gurgacz), interrogeant 31 patients après la signature du formulaire de consentement libre et éclairé on a fait l'application du questionnaire composé par 31 questions, en étant 8 ouvertes et 23 fermées, pendant environ un mois. Et de ceux-ci, 17 ont envisagé les critères d'inclusion. Dans la recherche, 54,8% des interviewés étaient d'origine vasculaire, la plupart d'entre eux (76,5%) étaient du sexe masculin, avec un groupe plus âgé, avec une moyenne de 64 ans et le changement du cote qui a prévalu a été la douleur fantôme (70,6%). Comme prévu, nos moyennes sont restées conformément auxquelles vues dans la littérature.

MOTS-CLÉS: Amputation. Transfémoral. Cause vasculaire.

ESTUDIO EPIDEMIOLÓGICO: INCIDENCIA Y COMPLICACIONES DE LA AMPUTACIÓN TRANSFEMORAL DE CAUSA VASCULAR

RESUMEN

Amputación es una palabra derivada del latín, que significa la retirada total o parcial de un miembro del cuerpo, pudiendo ser por causa vascular, neuropática, traumática, tumoral, infecciosa y congénita. En Brasil, se estima que la incidencia de amputaciones sea de 13,9 por 100.000 habitantes/año y en los EEUU es estimada en 4,9 amputados por 1000 nacidos vivos, siendo cuatro veces mayor cuando se habla de personas con más de 65 años. Como muestra la literatura, la principal causa de amputación son los problemas vasculares y a ellos están relacionados varias otras patologias y factores de riesgo, como el tabaquismo y otros. Este artículo tuvo por objetivo identificar la incidencia, así como, las principales complicaciones asociadas a la amputación transfemoral de causa vascular. Fue realizado un estudio epidemiológico, en las clínicas integradas FAG, entrevistando 31 pacientes, después que firmaron el término de consentimiento libre y aclarado se procedió a la aplicación del cuestionario compuesto por 31 cuestiones, siendo 8 abiertas y 23 cerradas, aproximadamente durante un mes, y de estos, 17 fueron los que contemplaron los criterios de inclusión. En la encuesta, 54,8% de los entrevistados eran de causa vascular, la mayoría de ellos (76,5%) del sexo masculino, con una franja etaria más elevada, cuyo promedio fue de 64 años y la alteración en el coto que prevaleció fue el dolor fantasma (70,6%). Como era previsto, nuestros promedios quedaron de acuerdo con lo que es visto en la literatura.

PALABRAS CLAVE: Amputación. Transfemoral. Causa Vascular.

ESTUDO EPIDEMIOLOGICO: INCIDENCIA E COMP LICAÇÕES DA AMPUTAÇÃO TRANSFEMORAL DE CAUSA VASCULAR

RESUMO

Amputação é uma palavra derivada do latim, que significa a retirada total ou parcial de um membro do corpo, podendo ser por causa vascular, neuropática, traumática, tumoral, infecciosa e congênita. No Brasil, estima-se que a incidência de amputações seja de 13,9 por 100.000 habitantes/ano e nos EUA é estimada em 4,9 amputados por 1000 nascidos vivos, sendo quatro vezes maior quando fala-se de pessoas com mais de 65 anos. Como mostra a literatura, a principal causa de amputação são os problemas vasculares e a eles estão ligados várias outras patologias e fatores de risco, como o tabagismo e outros. Este artigo teve por objetivo identificar a incidência, bem como, as principais complicações associadas à amputação transfemoral de causa vascular. Foi realizado um estudo epidemiológico, nas clínicas integradas FAG, entrevistando 31 pacientes após assinarem o termo de consentimento livre e esclarecido procedeu-se a aplicação do questionário composto por 31 questões, sendo 8 abertas e 23 fechadas, aproximadamente durante um mês, e destes, 17 foram os que contemplaram os critérios de inclusão Na pesquisa, 54,8% dos entrevistados eram de causa vascular, a maioria deles (76,5%) do sexo masculino, com uma faixa etária mais elevada, cuja média foi de 64 anos e a alteração no coto que prevaleceu foi a dor fantasma (70,6%). Como era previsto, nossas médias ficaram de acordo com o que é visto na literatura.

PALAVRAS CHAVE: Amputação. Transfemoral. Causa Vascular.

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