



# Trend of Global Mortality Due to Major Amputations in Chronic Threatening Ischemia of Lower Limbs

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## Abstract

Worldwide, it is estimated that there are 202 million people with chronic PAD of the lower limbs, and that they present twice as many coronary events as the general population, with high mortality rates in the short, medium and long term. Despite the medical and revascularization treatments available for the management of lower limb PAD, major amputation (those performed above the ankle) remains a commonly used therapeutic option in advanced degrees of the disease. In the United States, this procedure is performed on 6.8% of patients hospitalized for PAD and when analyzed by groups, it reaches up to 15% to 20% of those diagnosed with chronic limb-threatening ischemia (CLI). Perioperative complication rates and 40.4% one-year mortality.

**Keywords:** Global Mortality; Major Amputations; Chronic Limb-Threatening Ischemia

## Objective

To describe the trend of global mortality due to major amputations in chronic threatening ischemia of the lower limbs (ICAE).

## Development

The percentage of amputation and mortality of the ICAMI are between 10 to 25%. Patients with critical arterial disease have a mortality of 25% per year. Patients who have required major amputation between 52 and 80% at 5 years. There are differences in survival between patients undergoing a primary or secondary amputation or between patients undergoing a transfemoral amputation, 1 year median survival, and a transtibial amputation, 2.4 years. Patients with diabetes mellitus or with disease severe kidney disease or those on dialysis also have worse one-year survival. Diabetes

mellitus and arterial disease double mortality in amputee patients. Other factors that increased overall mortality are described, such as coronary heart disease, cerebrovascular disease, ASA IV anesthetic assessment, dementia, and lack of ambulation. As well as sequential surgery with a previous guillotine amputation. Cardiovascular diseases continue to be the main cause of morbidity and mortality in developed and emerging countries. They are the main cause of death in Brazil, having been responsible, in 2006, for 29.4% of deaths in the country, while neoplasms were 15.1%. Because it is a chronic disease, the resources required for its treatment are high. In the North American population, the estimated cost per year was \$5,955 per patient with a tendency to continue increasing [1].

The main causes of mortality found by some researchers were cardiovascular diseases (42.2%), neoplasm's (17.1%) and respiratory diseases. It is estimated that after age 40,

the risk of PAD increases two to three times for every 10 years of increase in age. PAD, in addition to increasing with age, also contributes to increased morbidity since it is the most common indication for lower limb amputations. The high association between PAD, coronary artery disease and carotid artery disease is evident, which predisposes these patients to a significant increase in the risk of developing acute myocardial infarction, ischemic stroke and vascular death. In this context, PAD is interpreted as an essential marker of systemic atherosclerosis and a predictor of heart attack and stroke [1]. Death due to coronary heart disease linked to PAD accounts for between 40-60% of deaths, followed by cerebrovascular accidents (10-20%) and only 20-30% of patients with arterial insufficiency of the lower extremities die from unrelated causes. cardiovascular. The following are associated with higher mortality: advanced age at presentation, smoking, diabetes, renal failure on hemodialysis, presentation with critical ischemia, and involvement of the distal arteries (legs) [2]. Mortality from this disease in Europe increased between 1990 and 2010, and in 2010 it reached 3.5/100,000 people in Western Europe. These numbers refer to mortality directly related to PAD; it must be taken into account that the majority of these patients die from complications related to coronary heart disease and stroke [3].

PAD has been associated with a three-fold increased risk of mortality, with the existence of multivessel disease equal to or even higher than the risk of patients with coronary artery disease alone. Patients with this disease have up to 5 times higher cardiovascular mortality. In fact, mortality in patients with PAD is fundamentally secondary to the involvement of other arterial territories, especially the coronary arteries (40-60%), followed by cerebrovascular involvement (10%). On the other hand, in patients with ischemic heart disease, the presence of PAD increases the risk of death by 25% [4]. Kennedy GEM, et al. [5] showed a two-year retrospective prevalence cohort involving 79 patients who underwent major lower limb amputations. Thirty-five patients (44%) died during follow-up; the median age at death was 74 years. Amputation was associated with significant mortality, with almost half of the study population dying during follow-up.

Mc Cook MJ, et al. [6] during 1977; carried out an epidemiological investigation in 218 patients from 26 municipalities of Havana who had undergone a major amputation, supra or infracondylar of the lower limbs; where a mortality rate of 24.3% was demonstrated; 59.5% of the time were due to Thromboembolic complications (pulmonary Thromboembolic, myocardial infarction and stroke) and 40.5% were infectious complications (bronchopneumonia and generalized sepsis). Age over 70 years, female sex, supracondylar amputation and history of heart disease was the factors most highly associated with

mortality. García RV, et al. [7] during the period 2014-2015 at the General Provincial Teaching Hospital of Ciego de Ávila carried out a descriptive cross-sectional study based on a population of 145 patients who were admitted and underwent major amputations in lower limbs due to diabetic foot. And PAD, with high blood pressure being identified as the most frequent risk factor 73.08%, followed by smoking 61.54%, sedentary lifestyle 42.31% and metabolic lack of control 50.54%. The complications of the patients during the time of hospitalization were bronchopneumonia (33.3%), followed by myocardial infarction in 2014 (22.22%) and death (20% in 2015).

In the study by Estévez TM, et al. [8] on the tendency towards lower limb amputations by the National Institute of Angiology and Vascular Surgery, there was a predominance of the male sex with a slightly increasing trend. Diabetic Angiopathy and obliterative atherosclerosis were the diseases that most frequently caused amputations, thus reporting the Infracondylar level of amputation in a greater proportion, and their trend was downward in relation to the supracondylar level of amputation, the trend of major amputations was It behaved upwards in those under 60 years of age and downwards in the group aged 70 and over. Luna CA, et al. [9] carried out an observational, descriptive, retrospective study with all the medical records of hospitalized patients with a diagnosis of PAD, due to Atherosclerosis Obliterans of the aortoiliac and femoropopliteal sectors, in the Arteriology service, National Institute of Angiology and Vascular Surgery, the Havana Cuba; during the years 2018-2019.

A general mortality of 9.5% was found, with 13.5% of deaths from the aortoiliac sector and 6.9% from the femoropopliteal sector. In the aortoiliac sector, deaths were associated with female sex and ischemic heart disease, while in the femoropopliteal sector it was associated with smoking. The main cause of death for the aortoiliac sector was hydro electrolyte imbalance and for the femoropopliteal sector, bronchopneumonia. Finally, no association was found between the occlusive pattern and the time in which death occurred, but amputation prior to the occurrence of death was associated with the longer the duration of the disease. Conclusions: The aortoiliac sector has approximately twice the probability of death compared to the femoropopliteal sector, which seems to be influenced by smoking as an associated factor.

The general trend towards an increase in atherosclerotic lesions in peripheral arteries, both in the diabetic and non-diabetic population, which accompanies economic-social development and the consequent increase in life expectancy, is an important fact for our country whose The population structure is increasingly approaching that of developed countries, since such arterial injuries are primarily

responsible for amputations, whose high frequency and high rates of morbidity and mortality are universally recognized. Despite this, there are very few population studies in this field. Reasons why we proposed to carry out an exhaustive review of both the national and international studies that appear published and to describe the trend of global mortality due to major amputations in threatening chronic ischemia of the lower limbs [10-13].

## References

1. Mota TDC, Santos JDM, Da Silva BDJC, De mesquita NMCB, Oliveira DM (2017) Doença arterial obstrutiva periférica: revisão integrativa. *Revista Uningá* 53(1): 120-125.
2. Cabezuelo Adame X, Vega de Ceniga N, Aramendi Arietaaraunabe C, González Fernández A, Estallo Laliena L (2018) Pronóstico global de los pacientes con isquemia crítica de las extremidades inferiores. *Angiología* 70(3): 113-119.
3. Shabhay A, Horumpende P, Shabhay Z, Mganga A, Van Baal J, et al. (2021) Clinical profiles of diabetic foot ulcer patients undergoing major limb amputation at a tertiary care center in North-eastern Tanzania. *BMC Surg* 21(1): 34.
4. Colantonio LD, Hubbard D, Monda KL, Mues KE, Huang L, et al. (2020) Atherosclerotic risk and statin use among patients with peripheral artery disease. *J Am Coll Cardiol* 76(3): 251-264.
5. Kennedy GEM, Mcgarry K, Bradley G, Harkin DW (2019) All-cause mortality amongst patients undergoing above and below knee amputation in a regional vascular centre within 2014 2015. *Ulster Med J* 88(1): 30-35.
6. Mc Cook Martínez J, LopezMaranges L, de Armas Vicent Y, EdreiraPerez J, Gonzalez García A, et al. (2021) Amputaciones Mayores de los Miembros Inferiores por causas vasculares. Estudio Epidemiológico. *Rev Cub Med* 22: 517-540.
7. García RV, Tamayo CNT, Martínez YTG, Pacheco JB, González MEM (2017) Clinical and epidemiological characteristics of amputee patients at the General Hospital of Ciego de Ávila. *Medí Ciego* 23(4): 29-35.
8. Estévez Touzard M, Zacca Peña E, Mc Cook Martínez J (1994) Tendencia de las amputaciones mayores en el Instituto Nacional de Angiología y Cirugía vascular. *Rev cuba hig epidemiol* 32(1/2): 11-18.
9. Luna Carmentates A (2023) Asociación entre mortalidad y topografía de enfermedad arterial periférica por Aterosclerosis Obliterante. Trabajo de Terminación de Residencia para Optar por el Título de Especialista de Primer Grado en Angiología y Cirugía Vascular, La Habana, Cuba.
10. Barbosa B (2020) Perfil de pacientes amputados: Um estudo de prevalência. Trabalho de Conclusão de Curso apresentado ao curso de graduação em Enfermagem. Faculdade de Educação e Meio Ambiente- FAEMA Brasil: Biblioteca Júlio Bordignon-FAEMA.
11. Cheng SW, Ting AC, Lau H, Wong J (1999) Epidemiology of atherosclerotic peripheral arterial occlusive disease in Hong Kong. *Word J Surg* 23(2): 202-206.
12. Sousa PP (2019) Marcadores analíticos que condicionam os resultados de cirurgia de revascularização em doentes com Doença arterial periférica. *Rev Angiología e Cirurgia Vascular* 17(2): 1-8.
13. Cura F, Jozami S, Albertal M, Zaefferer P, Pfund G, et al. (2010) Tratamiento de la isquemia crítica de miembros inferiores. *Rev Argent Cardiol* 78(2): 129-133.

