

Perioperative and Rehabilitation Outcome after Lower-Limb Amputation for Critical Ischemia

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Editorial

The Trans-Antlantic Intersociety Consensus (TASC) II Working Group estimated that the incidence of major amputations (amputations above the ankle) varies from 12 to 50 per 100.000 population per year and that the annual rate of primary amputation in critical limb ischemia is 25% despite aggressive revascularization programs [1]. Indications for amputation include: a) complications of diabetes (70%), b) infection without diabetes (15%), c) ischemia without infection (10%), d) trauma and miscellaneous (5%) [2]. Aging of the population and increase of diabetes and obesity are the main reasons to support that future trends in these areas will have a great effect on health care systems.

Major amputation for critical limb ischemia is performed with aim to remove infected, gangrenous and ischemic tissue. The goal for the elderly diabetic vascular patient is to provide him with the longest functional limb, without repeated amputations and nonhealing sites, and therefore amputation must be considered an important and definite treatment. Except for the psychological major effect, amputation is a high risk procedure concerning in-hospital mortality and morbidity and after hospital quality of life. Do we provide our patients the medical quality they deserve and how can we improve outcome in relation to these three factors? We have to recognize them first and then modify their outcome.

Unreconstructable peripheral vascular disease is the most common indication for amputations and this scenario accounts for 60% of patients [1]. In this setting, patients either had prior attempts at limb salvage via revascularization or were initially presented with no anatomically feasible revascularization options by open or endovascular procedures. Besides, patients with critical leg ischemia present with severe cardiopulmonary disease and limited life expectancy (25% annual mortality rate) without any surgical or interventional procedure [1]. In one study, among the 2,375 veterans included (98.9 percent were male, average age was 67.3 years) in hospital mortality after amputation was 8% and average length of stay was 28.6 days [3]. In a recent retrospective study at an academic tertiary care center, cardiac complications were the leading cause of death within 30 days following lower-limb amputation (10/35), followed by sepsis (5/35) and pneumonia (4/35) [4]. The 30-day mortality rate was 8.6 percent in this population, and patients with sepsis requiring guillotine amputation had a significantly higher 30-day mortality rate of 14.3 percent [4].

For rehabilitation of patients following a nontraumatic lower-limb amputation, care teams need a better understanding of mortality risk in the years following surgery to target services to this population. For patients at high risk of mortality within 6 months to 1 year, early intervention and rehabilitation goals that focus on appropriate mobilization, activities of daily living, and quality-of-life issues become critical. A personalized risk factor assessment would help care teams develop improved treatment plans for the specific patient at high morbidity and mortality risk. A balance between early intervention and longer-term goals is the best strategy. For a patient with a recent amputation, rehabilitation must focus on appropriate

activities that help patients function more quickly, thus adding quality to their remaining lifetime. While morbidity following a lower-limb amputation for vascular disease is high, many patients in the immediate postoperative period receive prosthesis. These patients function reasonably well, at least in the short term.

Following a major amputation, many patients worry about the fate of their remaining limb. Patients surviving more than 3 years after the first amputation have a significant chance of needing a contralateral amputation [5]. The presence of renal failure is a particularly poor prognostic indicator of second limb amputation [6]. Continued efforts focused on patient education and preventive foot care are essential. Close vascular examination and management of peripheral arterial disease in the contralateral limb after unilateral amputation is important for the long-term functional outcome of these patients.

Successful completion of the operation is only the beginning of the patient's recovery. Depression is common following major amputation, especially in younger amputees [7]. Clinical evaluation by a psychiatrist and appropriate medical therapy for depression should be considered. Amputees with significant depression may become malnourished owing to loss of appetite; malnutrition may delay healing, contribute to the development of pressure ulcers, and seriously affect the patient's overall recovery. Psychological support or medical treatment can decrease the severity and incidence of depression following amputation [8]. The psychological impact of the loss of independence can be minimized by aggressive rehabilitation.

When one considers long-term outcome, optimal postoperative care following a lower-limb amputation requires collaboration and a team approach involving surgery, medicine, and rehabilitation. Development of a rehabilitation clinical pathway for patients with amputation would be one possible method of ensuring early postamputation involvement of rehabilitation professionals. Dealing with these issues requires also the participation of psychologists, nurses, and geriatric and rehabilitation specialists. While numerous clinical practice guidelines exist for the patient after stroke review of the literature found none for the patient after amputation. Providing early and aggressive rehabilitation following lower-limb amputation makes intuitive sense, but evidence is lacking and should be a focus of future research. Peripheral vascular disease is increasing; vascular surgery and medicine have offered new horizons in fighting vascular

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Received April 10, 2012; Accepted April 10, 2012; Published April 13, 2012

Citation: Filis KA (2012) Perioperative and Rehabilitation Outcome after Lower-Limb Amputation for Critical Ischemia. J Nov Physiother 2:e118. doi:10.4172/2165-7025.1000e118

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disease; the incidence of amputations due to critical limb ischemia have to be decreased, but they will still remain the last option.

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