

Major Lower Limb Amputations: Experience of a Tertiary Care Hospital in Sri Lanka

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ABSTRACT

Objective: To determine the epidemiology and conditions frequently seen in major lower extremity amputation.

Study Design: Observational study.

Place and Duration of Study: Teaching Hospital Karapitiya, Sri Lanka, from October 2013 to September 2014.

Methodology: Major lower limb amputations were identified according to ICD-10 criteria. Data was retrospectively collected. Type of the amputation, indication for the amputation, gender and age of the patients, and mortality were noted.

Results: Eighty-five cases of major lower limb amputations were analyzed, including 43 above-knee amputations, 40 below-knee amputations, and 2 through-knee amputations. Most of the patients were in their 7th (38.8%, n=33) and the 8th (21%, n=18) decade of life. Female to male ratio was 1:1.7. Indications of lower extremity amputation were diabetic foot ulcer (37.6%, n=32), peripheral vascular disease (31.7%, n=27), followed by trauma (n=6), acute limb ischemia and infections (n=5 each), chronic osteomyelitis (n=4), tumors (n=3), elephantiasis, pressure sore and chronic wound (n=1 each). Overall diabetes frequency was 52.9% (n=45). In-hospital mortality rate was 9.4%. Main cause of deaths was septicemia.

Conclusion: In the study population, major lower limb amputations were more common in males compared to females, with highest incidence in the 7th and 8th decades. Diabetes mellitus contributed to more than 50% of amputations directly or indirectly, and septicemia was responsible for the most mortality.

Key Words: Amputation. Diabetes mellitus. Peripheral vascular disease. Septicemia.

INTRODUCTION

History of limb amputation runs as far as Neolithic period. Since then, this ancient procedure has been practised for various punitive, ritual, and therapeutic reasons.¹ In modern medicine, limb amputation is considered as the last resort when limb salvation is impossible. Thus, limb amputation is considered when the limb is dead, deadly (endangering the patient's life) or functionally useless.² The global annual incidence of amputation ranges from 3 to 44 per 100,000 people, with Spain and Japan at lower extremity and American Indians at the upper extremity.^{3,4} Major lower limb amputation results in significant global morbidity and mortality.³⁻⁵ Apart from physical disability, loss of a limb by any individual causes profound economic, social, and psychological effects on the patients and their families.⁶⁻⁹ This effect is more pronounced in developing countries where prosthetic services are not readily available.

Limb amputations can be done at different levels. Different criteria have been used to categorize this. ICD-

10 criteria identify below-knee, above-knee, through-knee, hip disarticulation, and hindquarter amputations as major lower limb amputations. The incidences of different pathologies leading to limb amputations differ from region to region. Peripheral vascular diseases are the leading cause in developed countries; whereas trauma, infections, uncontrolled diabetes mellitus, and malignancies are the leading cause for amputation in developing countries.^{10,11} Diabetes complications contribute 25% (in Italy and Japan) to 90% (in American Indians) of global amputation burden.⁴

The primary aim of this retrospective study was to investigate the frequent conditions leading to lower extremity amputations in Teaching Hospital Karapitiya, Sri Lanka. Secondary objectives were to determine the age and gender in these cases and assessment of in-hospital mortality rate.

METHODOLOGY

All the patients who have undergone major lower limb amputations at Teaching Hospital Karapitiya over a period of one year from October 2013 to September 2014 were retrospectively analyzed. Major amputations were identified according to ICD-10 criteria. All the major amputations done in the hospital was included in the study; whereas, minor amputations and patients who underwent amputations in other hospitals and traversed for continuation of management were excluded from the study.

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Data was collected from operation theatre notes and discharged bed-head-tickets. Type of the amputation, indication for the amputation, gender and age of the patients were noted. All statistical analysis were done using SPSS version 20. Descriptive statistics were determined for the studied variables.

RESULTS

Out of the 85 cases, there were 43 above-knee amputations, 40 below-knee amputations, and 2 through-knee amputations. Age distribution was between 14 - 92 years and most of the patients were in their seventh (38.8%, n=33) and the eighth (21%, n=18) decade of life.

Among all the amputees, 63.5% (n=54) were males and 36.5% (n=31) were females. Female to male ratio was 1:1.7. Conditions associated with lower extremity amputation were diabetic foot ulcer (37.6%; n=32), followed by peripheral vascular disease (31.7%; n=27). Other causes for amputations were trauma (n=6), acute limb ischemia and infections (5), chronic osteomyelitis (4), tumors (3), elephantiasis (1), pressure sore (1), and chronic wound (1). Ten out of 27 patients, who underwent amputation for peripheral vascular disease and 3 out of 5 patients with necrotizing fasciitis, also had diabetes mellitus. Therefore, the overall diabetes frequency was 52.9% (n=45) indicating a close association between diabetes mellitus and lower limb major amputations. Mean age group for diabetic amputations was 65, whereas for peripheral vascular disease it is 66 years. Eight patients died during the same admission giving an in-hospital mortality rate of 9.4%. Causes for those deaths were septicemia, acute renal failure, hospital acquired pneumonia, hyponatraemia and massive upper GI bleeding. Out of the 8 patients, who died, 6 had undergone above-knee amputations and there was single below-knee and single through-knee amputation.

DISCUSSION

Major limb amputation is a common surgical procedure performed by orthopaedic, general, vascular and trauma surgeons for a vast number of therapeutic reasons. It has profound psychological, economic, and social influence towards the patients as well as their families. Indications for amputations are almost universal; but the main indication changes from region to region. Thus it is important to identify main indication in a particular community to plan preventive measures. The objective of the audit was to identify the main indications for major lower limb amputations in Sri Lankan population. As secondary objectives, we have also assessed the age and gender distribution as well as the hospital mortality rates of those patients. Most of our amputees were males, giving a male female ratio of 1:1.7. This male preponderance was aligned with the findings by other

authors.^{6,7,12-14} The majority of our patients were in their 7th and 8th decades. It is compatible with some other studies,¹⁵ but higher than most of the studies which give a peak incidence at 4th and 5th decades.^{6,14,16,17} Complications of diabetic foot ulcers were the most common indication for major limb amputation in our study, followed by peripheral vascular diseases and trauma 37% of peripheral vascular disease patients, and 60% of patients with infections also had diabetes as an additional risk factor, giving an overall diabetic prevalence 52.9%. Similar trend was also reported in other series.¹⁷⁻²⁰ High prevalence of diabetes mellitus among amputees indicates a close association between these two and reflects the effectiveness of management of diabetes and its micro- and macro-vascular complications. The risk of amputation in diabetic patients is increased up to 15-fold [26]. These figures warrant the necessity for proper local studies, to look into this problem, and necessitate the need for preventive interventions to reduce this major health burden. In-hospital mortality rate of our study was 9.4%, which is comparable with the similar studies done elsewhere. Causes for the deaths were septicemia (3), acute renal failure (2), hospital-acquired pneumonia (1), hyponatraemia (1), and massive upper GI bleeding.

CONCLUSION

In the study population, major lower limb amputations are more common in males compared to females. The incidence is highest in 7th and 8th decades. Diabetes mellitus directly and indirectly contributes to more than 50% of amputations. Commonest case for mortality was septicemia.

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