Limb amputations at a Tertiary Hospital in the Developing World: A Look at Pattern and Indications

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ABSTRACT

Objectives: To determine the pattern of amputations in a tertiary centre.

Design: Retrospective.

Setting: Orthopaedic Department of the University of Benin Teaching Hospital, Benin City, Nigeria.

Patients: Two hundred and ten (210) Individuals who underwent limb amputations between January 2007 and December 2011.

Results: There were one hundred and forty nine (149) male and sixty one (61) female patients (71% and 29% respectively). The ages ranged from one year (1) to ninety years (90). The mean age at presentation was 42.33±19.96 (SEM = 1.378). Limb ischaemia, trauma and neoplasia made up 55.7%, 35.7% and 4.8% respectively of all cases analyzed. There were one hundred and fifty (150) lower limb amputations and sixty (60) upper limb amputations.

Conclusion: Limb Ischaemia is the commonest indication for amputations done at the University of Benin Teaching Hospital.

Keywords: *Limb amputation, trauma, gangrene*

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INTRODUCTION

Limb amputations represent one of the oldest types of surgical procedures performed and continue to be an important procedure performed in most surgical services with an estimated 185,000 performed worldwide every year[1,2].

The indications for limb amputations vary from life threatening conditions to conditions where improvement in body image and function are the only goals of treatment. There are varying reports on the pattern of amputations across the globe and even within the same sub-region. In some studies, trauma has been identified as the leading indication for amputations whereas peripheral vascular disease has been identified as the commonest indication for limb amputation in other studies[3-6].

This paper aims to look at limb amputations in a tertiary health care facility in the developing world, defining indications for amputations as well as patterns of presentation.

Patients and methods: this was a five year retrospective epidemiological study carried out in the orthopaedic unit of the department of Orthopaedics and Traumatology, University of Benin Teaching Hospital, Benin City, Nigeria. All patients who underwent limb amputations between January 2007 and December 2011 were

included in this study. Data extracted from clinical records included patient demographics, indication for amputation and level of amputation. Outcomes were not studied.

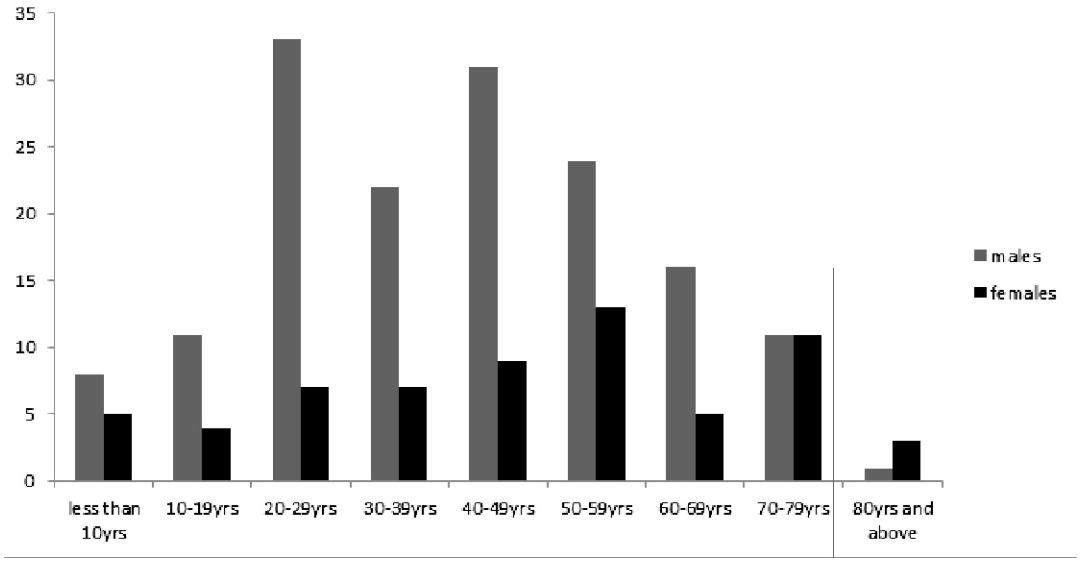
The study population was divided into upper limb amputations and lower limb amputations. The population was also divided into major and minor limb amputation using wrist and ankle as cut-off for definition of major/minor limb amputation[7].

Analysis was carried out using Microsoft excel statistical package with results obtained being expressed in tabular and graphical forms as deemed appropriate.

Range and standard error of mean were used to represent measures of dispersion and variance respectively, while measures of central tendency were represented by determination of mean where appropriate.

Results: A total of two hundred and ninety one (291) limb amputations were carried out during the study period but complete records were only obtainable for two hundred and ten (210) cases. This was made up of one hundred and forty nine (149) male patients and sixty one (61) female patients (71% and 29% for Male and female respectively). The ages ranged from one year (1) to ninety years (90). The mean age at presentation was 42.33±19.96 (SEM = 1.378). The age and sex distribution is represented in figure 1.

Fig 1. Bar Chart representing age and sex distribution



Limb ischaemia was the commonest indication for amputation making up 55.7% of all cases done. Trauma was the indication in 35.7% of cases done. The indications for amputations over the study period are represented in figure 2 and table 1. There were sixty (60) upper limb amputations and one hundred and fifty (150) lower limb amputations making up 28.6% and 71.4% respectively. During the study period, there were one hundred and fifty seven (157) major limb amputations and fifty three (53) minor amputations making up 74.8% and 25.2% respectively.

Fig 2. Pie chart representing indication for amputation

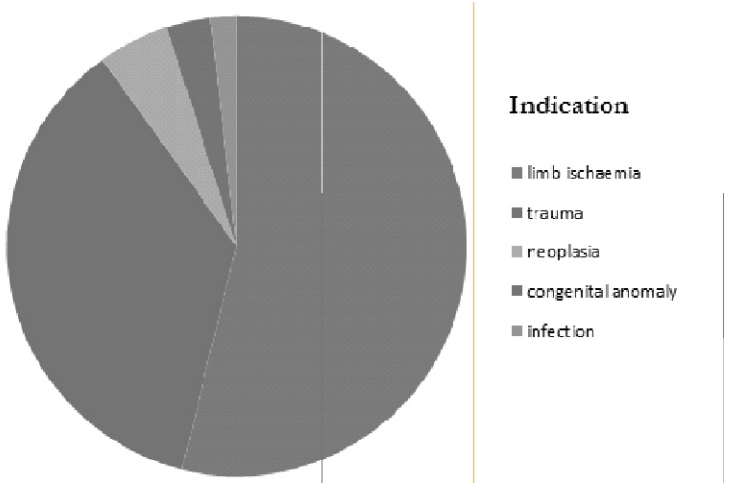


Table 1. Summary of results

	Frequency (N=210)	Percentage (%)
Age		
Less than 10 yrs	11	5.2
10-19yrs	15	7.1
20-29yrs	39	18.6
30-39yrs	26	12.4
40-49yrs	38	18.1
50-59yrs	34	16.2
60-69yrs	20	9.5
70-79yrs	23	11.0
80yrs and above	4	1.9
Sex		
Female	61	29.0
Male	149	71.0
Indication		
Limb ischaemia	117	55.7
Trauma	75	35.7
Neoplasia	10	4.8
Congenital anomaly	5	2.4
Infection	3	1.4
Position		
Left	99	47.1
Right	104	49.5
Bilateral	7	3.3

Discussion: Amputations represent one of the oldest and commonest procedures carried out in most orthopaedic services. It is a potentially disabling procedure which imparts on quality of life. It is no longer viewed purely as a salvage procedure, but as a form of treatment for some pathologies. The goals of amputation are to achieve speedy healing with resultant good functioning of the limb and early rehabilitation of the patient.

The indications for amputations range from complications of limb ischaemia, trauma, neoplasia or congenital limb deformities where function is better served by a prosthetic limb. It may also be a life saving procedure in cases of sepsis and has been indicated for even relatively rare conditions like mycetoma[8].

We found in this study that majority of patients present between the 3rd and 6th decades of life with the 3rd and 5th decades predominating. Another observation in this study is that amputations were almost three times as common in males when compared to females. This is similar to reports from Western Sudan, Saudi Arabia and Tanzania[8-10]. In particular, there was a male preponderance in the first seven decades of life whereas above 80yrs, there was a female preponderance. It is almost certain that, like with most medical conditions, the most likely aetiology will be the major determinant of the age and sex distribution of amputations in general. There has been a documented global increase in the incidence and prevalence of diabetes mellitus[11]. This fact, coupled with a higher incidence of smoking and vascular complications in males patients are possible reasons for this distribution.

Peripheral vascular disease with resulting ischaemia is thought to be the commonest cause of limb amputations in western countries. In western sudan, sepsis in patients with diabetic foot was the commonest indication for amputation[8]. In saudi Arabia, limb ischaemia was the commonest indication for amputation[9]. These findings are in keeping with results of this study which place complications of limb ischaemia as the leading indication for amputation in our environment. There have been contrary reports in the literature on the indications for amputations[12,13]. Thanni[6] et al in a nationwide review of indications for amputations in Nigeria determined that trauma was the commonest indication for amputation, accounting for 34% of all cases and peripheral vascular disease accounting for 14.4% (diabetic gangrene 12.3% and peripheral artery disease 2.1%). In particular, he determined that trauma was the more common indication in the southern part of Nigeria. The reason for the variation in patterns of indication is not clear. It is possible that an increase in the incidence and prevalence of diabetes mellitus coupled with poor compliance with medical management of this condition contributes significantly to the increased incidence of complications in these patients. Another possible explanation is a change in dietary pattern in our patients with the increasing 'westernization' in these parts. Trauma nevertheless, continues to be a significant indication for amputation, accounting for about a third of all cases seen in this series. Trauma is commoner in the first four decades of life and this may offer another possible reason for the observed disparity. In our study, the mean age at presentation was 42 years with less than half of patients presenting in the first four decades of life as against 33 years in the study by Thanni et al.

We also noted that limb amputations are more commonly done for lower limb pathology, an observation also noted by Chalya[10] et al.

Conclusion: The findings of this study conclude that limb ischaemia is the commonest indication for amputations carried out in the University of Benin Teaching Hospital, Benin City.

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