

Major limb amputations in a tertiary hospital in North Western Nigeria.

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Abstract

Background: Amputation is the removal of whole or part of a limb, often as a life saving measure. It is a mutilating surgical procedure altering the body image and producing severe functional deficit. It is a common orthopedic surgical procedure performed worldwide.

Aims and objectives: The aim of this study was to determine the pattern and indications for amputation in Federal Medical Centre, Birnin Kebbi, Kebbi State, Nigeria; between January 2008 and December 2014, in a bid to proffer preventive measures.

Patients and methods: This was a retrospective study of consecutive patients who had major limb amputations at the Federal Medical Centre, Birnin Kebbi, Kebbi State, Nigeria; between January 2008 and December 2014. Case notes of patients were retrieved with relevant information extracted and analyzed.

Results: A total of 112 amputations were studied. The age range of patients was between 3-89 years. Amputation in 23.5% of patients was due to trauma, followed by diabetic foot gangrene in 21% of cases. About 42.9% of the amputations were above knee, followed by below knee amputations in 37% of cases. The lower limbs were involved in 84.8% of cases and upper limbs in 15.2% of cases.

Conclusion: Trauma was the most predominant indication for amputation in this study. This was followed by diabetic foot gangrene. This is usually due to the high rate of road traffic accidents and consequent mismanagement by traditional bone setters.

Keywords: Limb amputations, tertiary hospital, North Western Nigeria.

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Introduction

Amputation is the surgical removal of an external part of the body, most often a limb or part of it as a form of treatment.¹ A major amputation is one that is performed proximal to the ankle or wrist.² The sudden and unexpected loss of the extremity to trauma (without going through a pre-loss adaptation) is a devastating condition.³ The indications for amputation are trauma, malignant tumors, diabetic gangrene, peripheral artery disease, limb infections and burns.⁴

While the indications for amputation in Europe and America are dwindling, the situation in Nigeria is worsening, as many treatable cases end up in amputation.⁵ Nigeria also suffers from the lack of adequate rehabilitation for these unfortunate patients who as a result end up on the streets as glorified beggars.⁵ The most common indication for amputation in Nigeria is trauma, while in the U.S.A, it is peripheral vascular disease. Other indications include diabetic foot gangrene, infections, neoplasm, gunshot injuries and congenital deformities.⁶ However the trend is said to be changing in favor of diabetic foot gangrene, according to recent literature from various regions.^{2,7,8,9,11} Unfortunately patients in developing countries often present late, when limb salvage is not a viable option.⁸

Limb amputation is not only a loss of physical integrity, but it also affects individuals' mental and social well being.⁹ It is a significant problem especially for the youth and working population.⁹ In spite of the latest improvements in adapting to amputation and invention of im-

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proved prosthesis, surgeons consider it as the last treatment option.¹⁰ Medico-legal issues sometimes influence decision making with regard to salvaging or amputating a limb. The decision to perform limb salvage or primary amputation is thus a crucial one for the surgeon to make, and it is imperative that the surgeon makes a good initial decision.¹¹

In Nigeria, most of the limb amputations are preventable through public enlightenment, good health care policies, and the provision of affordable appropriate health care that the patient could access on time.¹² Controversies exist on the highest indication for major limb amputations in Nigeria.⁷ Ours is the first research on epidemiology in Kebbi State, North Western Nigeria. The aim of this study was to determine the pattern and indications for amputation in our environment and to make necessary recommendations towards their prevention.

Patients and methods

This was a retrospective study of major limb amputa-

tions performed in Federal Medical Centre, Birnin kebbi, North Western Nigeria, from January 2008 to December 2014. Data was collected on age, gender, indication, limb affected and level of amputation. Only case notes of patients who had complete medical records were included in this study. Data collected was analyzed using the Statistical Package for Social Sciences for Windows version 17.0 (SPSS Inc. Chicago Illinois). Results are presented with descriptive statistics.

Results

A total of 116 amputations were performed in 117 patients. One patient had bilateral below knee amputation. Four case files were excluded from the study due to incomplete records. A total of 112 amputations were studied. 77(68.1%) were males while 35(31.9%) were females. The male-female ratio was 2.1:1. The age range was from 3-89 years (mean=32.4). The peak age group was 0-16 years (Table 1).

Table 1 - Age distribution (Years)

	Frequency	Percent
0-16	22	19.6
17-25	21	18.8
26-35	16	14.3
36-45	14	12.5
46-55	12	10.7
56-65	12	10.7
66+	15	13.4
Total	112	100.0

41.7% of upper limb amputations occurred in children. Of the amputations in children, 18(79.2%) were due to trauma of which 14(62.5%) resulted from poor management.

(Table 4) Out of 90 amputations performed in adults, 26 (30.5%) were due to trauma, 25 (26.3%) were due to di-

abetic foot gangrene, 19 (22.1%) were due to neoplasm, 13(13.7%) were due to peripheral vascular disease and 7 (7.4%) due to post-infective gangrene.

27(24.1%) amputations were due to trauma, followed by diabetic foot gangrene which is 26(23.2%) (Table 2).

98(84.8%) amputations were in the lower limb while 17(15.2%) were in the upper limb (Table 3).

Table 2 - Indications for amputation

	Frequency	Percent
Diabetic foot	26	23.2
Post traumatic gangrene	27	24.1
Neoplasia	22	19.6
Sequel of tradition bone setter	18	16.1
Post infective gangrene	10	8.9
Peripheral vascular disease	9	8.0
Total	112	100.0

Table 3 – Type of amputation

	Frequency	Percent
Above knee	51	45.5
Below knee	44	39.3
Above elbow	15	13.4
Below elbow	2	1.8
Total	112	100.0

Of the upper limb amputations, 45.5% occurred in children. (Table 4). In diabetic foot disease, 56% had below knee amputation; while 44% had above knee amputation.

Table 4 – Indications for amputation in age 0 - 16

Indication for amputation	Frequency	Percent
Post traumatic gangrene	4	16.7
Neoplasia	2	8.3
Sequel of tradition bone setter	14	62.5
Post infective gangrene	2	12.5
Total	22	100.0

Discussion

The study showed a male preponderance. This study is in keeping with the findings of other studies, where there was a male preponderance.^{2,3,8,10,13} However the ratio varied from one region to another.¹² This is similar to the findings of Ofiaeli in SouthEast Nigeria¹³ and Dada and Awoyomi in SouthWest Nigeria.⁷ This is probably due to the fact that males are more involved in trauma, being more active.

Amputations in the pediatric age group occur usually as a result of poor management of trauma. Parents should take better care of their children as well as present early to hospital in case of trauma. The active age group of 17 – 49 years accounted for majority of the amputations. Most of these patients are young adult males in the productive age group. Amputations in this age group result in serious economic crisis for the family especially where prosthetic

use is poor.¹⁴ This is similar to the findings of Kidmas et al.¹⁴ and Ajibade et al.³

Trauma is the commonest indication for amputation, followed by diabetic foot gangrene. This is similar to the findings of studies conducted in various regions of Africa.^{2,3,8,10,12,13,14,15}

In a study conducted by Dada et al.⁷ diabetic foot disease is the most common indication. In children, trauma is the most common indication for amputation, as a direct result of poor management. This agrees with the findings of Akinyoola AL et al.¹⁶ and Yakubu A et al.¹⁷ This very high number of limb amputations in children is certainly preventable by early and effective management of fractures.

Above knee amputations accounted for majority of the amputations followed by below knee amputations. This agrees with the findings of Umaru et al.⁷ and Kidmas et al.¹² However it contrasts with the findings of Odatuwa-Omagbemi and Dada et al.^{14,18} It is also different from the findings of studies conducted in the developed countries.¹⁹ In diabetic foot disease, more below knee amputations were performed than above knee amputations. The higher rate of below knee amputations was an indication of early presentation and increased awareness of the disease. The prevalence of diabetes mellitus in Fulani ethnic group in NorthWestern Nigeria who have settled in an urban environment is higher than the same ethnic group in rural settings.²⁰ The lower rate among the rural dwellers can be attributed to a more traditional lifestyle which depends on animal husbandry and subsistence economy.²⁰ Most lower limb amputations in patients with diabetes are preceded by a foot ulcer, whose risk factors apart from peripheral vascular disease and peripheral neuropathy, are barefoot walking, inappropriate footwear, poor foot hygiene and delay in seeking medical attention.²¹ These non-traditional risk factors can be modified if identified early, and if patients have adequate knowledge of foot care and put that knowledge into practice.²²

Lower limb amputations were performed more than upper limb amputations. This is probably due to the fact that the lower limb is more involved in trauma, complications of diabetes mellitus and peripheral vascular disease.

The rate of major limb amputations is high in our environment, with physical, emotional, economic and psychological impairment. Trauma mostly results from road traffic accidents, assaults and falls from heights.² Drivers

should be educated on road traffic rules. Roads should be properly maintained and legislation on speed limit enforced. Traditional bone setters' practice should be regulated by the government. They should be taught basic principles of fracture care. They should know when to refer a patient to the hospital.¹⁸ The need for regular medical checkup should be re-emphasized. This will enable the early detection of diseases such as diabetes mellitus, so as to commence early treatment and reduce complications. Hospitals and government should organize regular health seminars with the aim of reducing conditions that will lead to amputations.

Patients that had amputations should be counselled on the need for prostheses afterwards to ensure proper rehabilitation and productivity. Ideally, such rehabilitation should begin from the moment the decision to amputate is made and requires a multidisciplinary approach involving the surgeon, prosthetist, physiotherapist, occupational therapist and social worker.²³

Conclusion

Trauma is the predominant cause of limb amputations. This is followed by diabetic foot gangrene. Amputation is performed more in the lower limb than the upper limb. More amputations are performed in the productive age group. Concerted efforts are needed towards reducing the rate of amputation.

Conflict of interest

We have no conflict of interest to declare.

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