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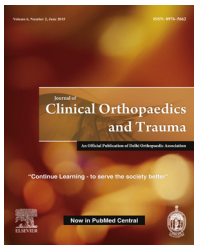

Original Article

The indications for major limb amputations: 8 years retrospective study in a private orthopaedic and trauma centre in the south-east Nigeria

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ABSTRACT

Background: Major limb amputation is a common orthopaedic trauma procedure and it is indicated mainly for traumatic gangrene and for trauma related limb conditions. The loss of a limb is devastating to the patient even when it is done to save life. The aims of the study are to highlight the indications for major limb amputations and to find out if there are any concurrent pattern changes.

Patients and methods: This is a retrospective study analysing medical records of all the patients, who had major limb amputations over a period of 8 years, between October 2007 and September 2015 in a private orthopaedic and trauma centre in the south-east sub-region of Nigeria.

Results: Traumatic gangrene was the commonest indication for amputation $n = 30$ (44.7%), followed by diabetic gangrene $n = 15$ (22.3%), and then traditional bone setters' gangrene $n = 10$ (14.9%). These were trailed by mangled extremity, malignant conditions of the limb and polydactyl in that order of decreasing frequency.

Conclusion: Traumatic gangrene and other trauma related limb conditions are the leading indications for amputation in this study despite some recent reports stating otherwise. Trauma is largely preventable and so there is a need for continued intensification of the public campaign on road use as a means of preventing severe limb injuries and thus reducing consequent need for amputations.

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1. Introduction

Limb amputation is as old as medicine. Hippocrates first described the surgical technique of amputation for a vascular gangrene in a published form in De Articularis. The limb was severed off from the margin of gangrenous part and left open to heal by secondary intension.[1] The major problems with the early amputation surgeries included haemorrhage, shock and sepsis.[1] These invariably resulted in a lot of deaths. Amputation

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surgeries like other aspects of medicine have evolved over the centuries and are indicated commonly in the patients, whose limbs are dead, or patients whose limbs are deadly and pose a life threat to them, or patients whose limbs are painful, functionless and constitute nuisance. Major limb amputations are the removal of limbs from the level of mid-tarsal joints or from the level of the wrist joint or from any elected site proximal to the aforementioned landmarks. Amputations are devastating to the patients and family members because of the sudden change in body form especially after trauma and the difficulties associated with rehabilitation and livelihood thereafter. Amputation is a major but preventable health problem that is associated with profound economic, social and psychological effects on the patients especially in developing countries where the prosthetic services are poor.[2]

It is a fairly common procedure that is carried out routinely in orthopaedic practice. It is estimated to constitute 0.38% of all orthopaedic procedure in Nigeria.[3] The reasons for amputations vary from region to region and from country to country. In the United States of America, vascular insufficiency in the limbs from peripheral vascular diseases or from diabetes mellitus related vasculopathy consist of 80–90% of all the indications for amputations.[4] In Nigeria, reports also vary according to the sub-region. Some authors had reported trauma as the commonest indication in the southern part while foot complication of diabetes mellitus is quoted as the commonest reason in the north and traditional bone setters' gangrene in the south east.[5] Recent publications also indicate that the trend is changing. Diabetes mellitus related complication was reported from the south west as the commonest indication for amputation.[6] The indications also vary accordingly whether the involved limb is the upper or the lower limb and sometimes the age of the patients. For example, the upper limbs are rarely affected by complications of diabetes mellitus unlike the lower limbs. Therefore, severe trauma may rank high as common cause for upper limb amputation, complications of diabetes that may lead to amputation in the upper limb are almost never encountered. Also amputation in children is more likely to be due to congenital limb anomalies when compared to adult patients. The aims of this study is to determine the indications for major limb amputations, to find out if there are any comparative change in the trend based on the existing regional reports as well as to determine the sex and age distribution of these patients who underwent amputation within the period of review (Table 1).

Table 1 – Age and sex distribution of patients that had amputation.

Age (years)	Number (%)	Male	Female
0–9	2 (1.5)	2	0
10–19	5 (7.5)	3	2
20–29	4 (6.0)	4	0
30–39	19 (28.4)	18	1
40–49	16 (23.9)	16	0
50–59	6 (9.0)	4	2
60–69	9 (13.4)	8	1
70–79	4 (6.0)	4	0
80–89	2 (3.0)	2	0
Total	67 (100)	61 (91.0)	6 (9.0)

2. Patients and methods

This study is a retrospective analysis, reviewing the records of patients, who had limb amputations in a private orthopaedic and trauma centre located in a densely populated commercial city in the south-east Nigeria. The centre is a 25 bedded facility with an all-time 92–100% bed occupancy in the past three and half years. The clientele base is mainly from the bustling commercial city with regular accident victims and from the scattered traditional bone setters' homes within the vicinity. All the patients were managed by one orthopaedic team consisting of a resident consultant orthopaedic surgeon and a visiting orthopaedic surgeon as well as the support staff.

The case files of all amputated patients treated between October 2007 and September 2015 that were compiled in folders and kept routinely with the medical records department were retrieved for analysis after obtaining approval from the ethical committee. The search words were amputation, gangrene or both. Additional information was collected from the operation register master list. Data analysed included age, sex, cause of injury, diagnosis and indication for amputation, type of amputation, duration of hospital stay, prosthesis fitting and mortality. Referred amputee patients with stump complications were excluded from the study. The data were subjected to statistical analysis using SPSS version 20 by International Business Machine 2011 and the results displaced as frequency distributions in tables and charts.

3. Results

A total of 67 amputations were carried out over the period of review. Traumatic gangrene was the commonest indication for amputation $n = 30$ (44.7%) followed by diabetic gangrene $n = 15$ (22.3%). Total trauma related gangrene constituted a high number of 47 patients (70%). These injuries were caused mainly by traffic accidents involving commercial motorcyclists. There was a very high male predominance with a ratio of 10:1. Young adults in the age bracket of 30–49 years were majorly affected $n = 35$ (52.2%). The range of hospital stay was 6 to <8 weeks for the majority of the patients. There were six mortalities (9.0%), three were from complications in diabetes, two from late presenting traumatic gangrene and one from rapid cancer metastasis. Twenty-one patients (31.3%) were fitted with prosthesis on the long run.

4. Discussion

Major limb amputation is a fairly common surgical procedure. Onuba et al. reported that amputation surgeries constituted an estimated 0.38% of all orthopaedic procedures in Nigeria.[3] Also, some authors estimated that the prevalence rate of amputation in Nigeria is 1.6 per 100,000 operations.[5] However there are no national data to collaborate the incidence of amputation. In the United States of America, about 30,000–40,000 amputations are done annually.[4] The reasons for amputation vary from countries to countries and from regions to regions in the same country. Post-traumatic gangrene is the

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