

LIMB AMPUTATIONS IN ADULTS IN AN IVORIAN TEACHING HOSPITAL

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ABSTRACT

Objective: To determine the pattern of limb amputations and preventable indications.

Design: A retrospective study

Setting: Department of orthopaedic surgery, Yopougon Teaching Hospital, Abidjan, Côte d'Ivoire.

Patients and methods: One hundred fifty-six patients with amputations over a 11-year period were studied. There were 111 men and 45 women with a mean age of 42 years.

Main outcome measures: Indications, level of amputation, morbidity, and mortality.

Results: A total of 160 limb amputations were performed in the 156 patients. Trauma (49.9%), diabetic foot sepsis (31.4%), and peripheral vascular disease (13%) were the main indications. Below knee (46.9%) and below elbow (11.2%) amputations were the most common procedures performed. Wound infection was the commonest complication occurring in 42 (26.9%) patients. There were 25 (16%) deaths, out of which 22 were due to sepsis.

Conclusion: Majority of amputations in our environment are preventable by education, early presentation and appropriate management of the common indications.

Key Words: Amputation, complications, indication, level, limb

INTRODUCTION

Limb amputation is a common surgical procedure performed by orthopaedic, general, vascular, and trauma surgeons. Loss of a limb by any individual, especially in underdeveloped countries is associated with very severe physical and emotional problems as this foreshadows a dismal existence.^{1,2} Literature is replete with studies conducted in West Africa that provide considerable insight into the problems of amputation surgery in developing countries.¹⁻⁵ However, it seems to be dumb with regard to reports from Côte d'Ivoire. As amputation patterns vary between countries, and between hospitals in a country, any study that highly contributes for clarifying features of certain conditions, leading to a better knowledge, basically helping in prevention and treatment in a given population is stressed. This was the reason that we made our study. We decided to carry out a retrospective analysis of adult patients with limb amputations during a 11-year period in our department, paying special attention to indications, level of amputation, morbidity, and mortality.

PATIENTS AND METHODS

The records of patients in our service in whom limb

amputation were performed between 1992 and 2002 were analysed retrospectively. Our institution is one of the three teaching hospitals in Abidjan, each hospital having its own orthopaedic department. Details extracted included demographic data, indication and type of amputation performed, morbidity, and mortality data.

RESULTS

We undertook 160 amputations in 156 patients over the period of study. Two cases of bilateral below knee amputations were performed, one of which was for gangrene following a bilateral case of Burger's disease. There were 111 (71.2%) men and 45 (28.8%) women with a mean age of 42 (15-84) years. Indications for amputation are displayed in Table 1. Six of the 78 trauma cases received initial treatment for their limbs fractures from traditional practitioners and presented with gangrene. The levels of amputation are given in Table 2. Lower limbs were involved in 120 cases and upper limbs in 40 cases giving a ratio lower limb to upper limb of 3:1. In lower limbs, the ratio below knee amputation to above knee amputation was 3.9:1. In upper limbs, the ratio below elbow amputation to above elbow amputation was 2.6:1. Wound infection was the most common complication occurring in 42 (26.9%) patients. Above-knee amputation was performed in this group for 10 patients giving an

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overall re-amputation rate of 23.8%. Stump dehiscence occurred in 19 patients. There were a total of 25 deaths which occurred within one month of surgery giving a mortality rate of 16%. Death was due to septicaemia complicating diabetic foot sepsis in 10 patients, peripheral vascular disease in six, malignant bone tumor in five whose lungs were also riddled with metastasis, and the case of Burger's disease. Death was related to shock complicating compound fractures in three cases. Duration of hospitalisation ranged from five days to seven months, with a mean of 34 days.

Table 1: **Indications for Amputations**

Indications	Frequency	Percent
Trauma		
Road traffic accidents	47	30.0
Industrial accidents	19	12.2
Assault	4	2.6
Gunshot	3	1.9
Farm injuries	3	1.9
Fall	2	1.3
Diabetic septic foot	49	31.4
Peripheral vascular disease	20	13.0
Malignant bone tumor	5	3.2
Osteitis	3	1.9
Burger's disease	1	0.6

Table 2: **Sites of Amputation**

Site	Frequency	Percent
Upper limb		
“Hand”	15	9.4
Below elbow	18	11.2
Above elbow	7	4.4
Lower limb		
“Foot”	26	16.2
Below knee	75	46.9
Above knee	19	11.9

DISCUSSION

The male to female ratio of 2.4:1 showed a clear male predominance which is in agreement with the findings by other authors.^{1,6,7} They were young, active, and the breadwinners of the family. Trauma was the leading cause of amputation in our department. These data are supported by the studies by Onuminya et al.² and Ekere⁸. In the studies conducted by Naeeder⁵ in Ghana, and by Ofiaeli⁹ in Nigeria, the commonest indication for amputation was diabetic gangrene. In our series, the triad trauma, diabetic septic foot, and peripheral vascular disease topped the list of indications for limb amputations. These findings are in line with those by Jenyo et al.⁶ However, they contrast sharply with the results obtained by Nwankwo and Katchy¹, Solagberu⁷, and

Kidma et al.¹⁰, the main triad being made up by trauma, diabetic septic foot, and malignancy in their respective articles. A likely explanation for this difference is the fact that our series dealt only with adults while the other authors included children who have been known to present frequently osteosarcoma.¹¹ The major indication for upper limb amputation was trauma while trauma as well as diabetic gangrene were the most common causes of amputation in the lower limbs. In the upper limbs, our data were similar to Yakubu et al.'s findings but in the lower limbs, the most common indication for amputation in their study was malignancy. Occurrence of gangrene in six patients sustaining a trauma and mismanaged initially by traditional bonesetters alludes to the inadequacies of these practitioners.¹²⁻¹⁴ The practice of these healers in low income countries in the area of musculoskeletal conditions has been widely reported previously especially in West African subregion.^{15,16} Late presentation of patients was another weak point in our context as they prefer having an initial treatment in the hands of traditional practitioners before electing to seek orthodox specialist advice. Primitive bonesetters are readily available and have often the reputation of being better at fracture treatment than orthodox practitioners. Moreover, surgical services lack and patients often suffering from poverty and going to these centres by primitive means have to pay directly for their care. Thus, the only attractive alternative to these hurdles remains traditional medicine. There is need to organise traditional healers in body registered by a government agency that will regulate this body and its practice. Through this body, organised education can be delivered to them with the hope to reduce the incidence of gangrene.^{12,17} Regarding the level of amputation, below elbow amputations ranked second to below knee amputations on the basis of their crude size. This is surprisingly contrary to the findings by Jenyo et al.⁶ revealing a predominance of above knee and above elbow amputations. Both series were yet similar in term of indications. The reason for this may be the tendency of most surgeons in developing countries when planning the level of amputation on the sole basis of clinical features to favour high level amputation owing to severe cellulitis or absent popliteal pulse.¹⁰ The overall wound infection rate of 26.9% reflected the severity of complications leading to amputation. Indeed, patients presented with spreading gangrene or advanced diabetic septic foot.¹⁰ The rate of mortality in the immediate postoperative period of 16% in our series compares favourably with those reported by Nwankwo and Katchy¹, Ofiaeli et al.⁹, and Kidmas et al.¹⁰ which were 15%, 12.6%, and 15.2% respectively. In conclusion, this study documents limb amputations in Ivoirians probably for the first time and adds statistics to this area. Surgeons should have knowledge of the spectrum of indications f

or amputation for the intrinsic educational value. Informations gathered may be useful in planning and resources management in our given population. Lessons learnt from this sample of population are that most amputations in our environment are preventable by education, early presentation and appropriate management of the common indications.

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