

Changing Pattern for Extremity Amputations in University of Maiduguri Teaching Hospital, Nigeria

Abbas A. D., MBBS, FWACS (Orth.), Musa A. M., MBBS, FWACS (Orth.)

Department of Orthopaedics, University of Maiduguri Teaching Hospital Maiduguri

Abstract

Background: Trauma has been the major indication for limb amputation in almost all studies emanating from the different parts of Nigeria, except in Maiduguri. Earlier studies from this part of the country recorded malignancy as the leading indication for amputation. There is need to review the current pattern of causes. The aim of this study is to ascertain the current indications for amputation in the University of Maiduguri Teaching Hospital and compare the findings with similar studies conducted in this centre about 15 years ago with a view to highlighting the changes in the pattern of causes. This would enable meaningful preventive measures to be proffered.

Methods: Case notes of all patients that underwent amputation surgery at the University of Maiduguri Teaching Hospital between January 2000 and December 2004 were retrieved and retrospectively studied. Data collected from the folders include demographic indices, indication for amputation, level and laterality of amputation, follow up visits and use of prosthesis.

Results: Forty-five patients' case notes with 49 amputations were analyzed. The male to female ratio was 3.5:1. The peak age incidence was in the 4th and 5th decade with 18 patients (40%). Trauma accounted for the highest indication with 21 amputations (42.8%) while malignancy was responsible for only 9 (18.4%). There were more lower extremity amputations, 35 (71.4%), as compared to the upper extremity, 14 (28.6%). Below knee amputation was the commonest amputation carried out constituting 22 (62.8%) of the 35 lower limb amputations.

Conclusion: Trauma, especially following from road traffic accidents was the major cause of limb loss in this part of Nigeria. Concerted efforts at enforcing the already existing traffic laws and regulations would go a long way in reducing the number and severity of cases of road traffic injuries that would require amputation.

Key Words: Changing Pattern, Amputation, Maiduguri, Nigeria

Paper accepted for publication: 13th August 2007.

INTRODUCTION

Colloquially speaking, the indications for amputation are

the three Ds: Dead, Dangerous and Damn nuisance.¹ Amputation of a limb or part of a limb is required when the vitality of the part is destroyed by injury or disease or when the life of the patient is threatened by the spread of a local condition. Amputation may also be desirable in patients with deformity or paralysis, where it is considered that the patient would be better served by an artificial limb.² An amputation, therefore, does not have to be considered a failure of treatment. Frequently, it is the treatment of choice for a devastating injury to the lower extremity where reconstruction may be a long and costly undertaking that leads to the preservation of a functionally unsatisfactory extremity. It may be the treatment of choice to improve mobility, to relieve pain, or even to save life³. With a prosthesis that fits well, the patient is most likely to become an active member of society and independent in his life-style. This is a five-year (2000-2004) retrospective study which aims at identifying causes leading to amputation as seen in the University of Maiduguri Teaching Hospital (UMTH). This would be compared with similar earlier studies carried out in the same hospital more than a decade ago so as to highlight the changing pattern of causes. This would therefore hopefully be used to proffer possible preventive measures where applicable.

PATIENTS AND METHODS

University of Maiduguri Teaching Hospital is a tertiary centre which serves the Northeastern region of Nigeria as well as the adjoining towns of the neighbouring Republic of Chad and The Cameroons. All patients that have undergone limb amputation surgery at the UMTH between January 2000 and December 2004 were recruited into the study. Their case notes were retrieved from the Medical Records Department. Data collected from the folders include demographic indices, indication for amputation, level and laterality of amputation, follow up visits and use of prosthesis. Involvement of traditional bone setters prior to hospital presentation was also extracted. The inclusion criteria for the study were that the case note must be available and must contain all the required data. Multi-way frequency tables were used for analyses.

Corresponding to Dr A.D. Abbas, E-mail: abbasdigil@yahoo.com

RESULTS

During the study period a total of 1025 patients were operated upon in the Orthopaedics Department. Fifty-six patients had amputations for various causes, that means amputations accounted for 5.5% of all orthopaedic operations during the study period. Of these, 11 patients' folders could not be found or did not contain all the required data and therefore were excluded from the study, leaving us with 45 patients (80.3% of amputation patients) to be analyzed. On the 45 patients, 49 amputations were performed.

There were 35 males and 10 females (M: F = 3.5:1). The median age at presentation was 36.6 years with a range of 1 to 85 years. The peak age incidence was in the 4th to the 5th decade of life with 18 patients (40.1%) as highlighted in Figure 1. Children accounted for 11 (24.4%) patients. There was no significant preponderance of any particular occupation, only two were vehicle drivers and none was a motorcyclist. Table I

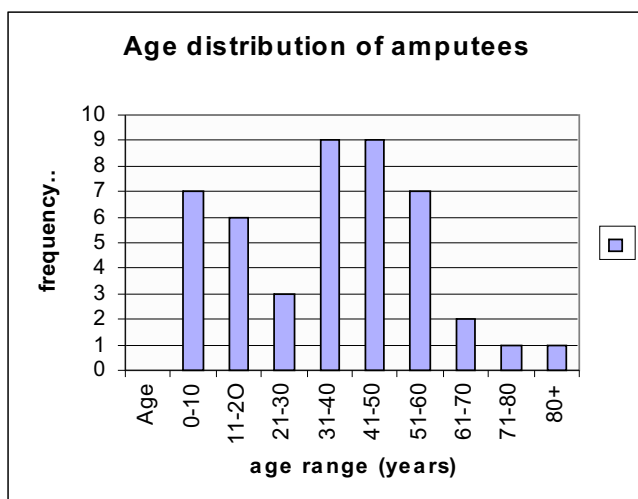


Figure 1. Age distribution of amputees

TABLE I. OCCUPATIONAL DISTRIBUTION OF CASES

OCCUPATION	FREQUENCY (%)
Driver	2 (4.4)
Student	5 (11.1)
Widow	1 (2.2)
Farmer	9 (20.0)
Police	1 (2.2)
Army	1 (2.2)
Civil Servant	4 (8.9)
Trader	5 (11.1)
House wife	5 (11.1)
Butcher	1 (2.2)
Child	11 (24.4)
TOTAL	45 (100)

INDICATION AND LEVEL OF AMPUTATION

Forty-nine amputations were performed on the 45 patients. This is accounted for by two of the patients who had bilateral below knee amputations and a shoulder disarticulation secondary to severe electric burns. Two children underwent amputation following gangrene secondary to snake bite to the lower extremity. Another child of one year had to be offered a below elbow amputation due to gangrene of the hand following an 'intravenous' injection in a drug store.

Trauma was the indication for amputation in the majority of cases, 21 (42.8%). Malignancy accounted for only 9 (18.4%). Five of the 21 trauma patients had traditional bone setters' (TBS) tight splinting as the cause of their gangrene. There were lower limb amputations, 35 (71.4%), as compared to the upper limb 14 (28.6%). Below knee amputation was the commonest amputation carried out constituting 22 (62.8%) of the 35 lower limb amputations. Details are shown in Table II. There was no significant difference in the predilection to a particular side except in the below knee level. Fifteen (68.2%) of the 22 below knee amputations were on the left side.

TABLE II. INDICATION AND LEVEL OF AMPUTATION

INDICATION	LEVEL OF AMPUTATION							TOTAL
	LOWER LIMB			UPPER LIMB				
	A/K	B/K	FOOT	SD	A/E	B/E	DT	
TRAUMA 21 (42.8%)								
RTA	3	4	1	1	1		2	12
ASSAULT						1		1
GSW	1							1
INDUSTRIAL TRAUMA					1		1	2
TBS GANGRENE	1	2			2			5
BURNS		2		1		1		4
DIABETES (12.4%)	1	5						6
MALIGNANCY 9 (18.4%)					1			5
SCC	1	3						4
BONE TUMOURS	2	1		1				5
PVD	1	4						5
OTHERS			1					1
MYCETOMA			1					1
IATROGENIC						1		1
SNAKE BITE	1	1						2
TOTAL	11	22	2	3	5	3	3	49
LIMB TOTAL	35 (71.4%)			14 (28.6%)				

KEY: A/K Above Knee, B/K Below Knee, S/D Shoulder Disarticulation, A/E Above Elbow, B/E Below Elbow, DT Digital, RTA Road Traffic Accident, GSW Gun Shot Wound, TBS Traditional Bone Setter, SCC Squamous Cell Carcinoma. PVD Peripheral Vascular Disease

MORBIDITY AND MORTALITY

There was no mortality recorded among the 45 patients studied. The duration of hospital stay ranged from one day to 4 months; one child had traumatic amputation of the right middle finger by a grinding machine which was refashioned as a day case, another woman underwent bilateral below knee amputation and a right shoulder disarticulation following a high tension electric burn with gangrene, which kept her in hospital for the 4 months. One 63-year-old diabetic with a below knee stump

developed post operative flap necrosis for which he had to have a re- amputation at a higher level. Eleven patients initially had provisional (guillotine) amputation because of sepsis, and these were refashioned later.

FOLLOW UP AND USE OF PROSTHESIS

Only 17 (37.8%) of the 45 patients were available for follow up, the remaining 28 (62.2%) were lost to follow up. Their last contact was at the time of discharge from hospital. Of the 17 follow up patients, 6 accepted referral for prosthetic fitting while the remaining cited financial constraint as the reason they could not go for prosthetic limb fitting. At the end of the survey only one 65-year-old retired police man was seen with a below knee prosthesis.

DISCUSSION

The causes that lead to amputation differ in different parts of the world⁴, and even in the same environment the indications for amputation do show some variations with time. This study highlights the changing pattern for amputations in the UMTH. There are also some major differences between outcomes of amputation in a developing economy as compared to a developed economy. In the developing world, major amputation in most cases leads to destitution; this is mainly because amputees can not afford prosthetic fitting,⁵⁻⁷ whereas it is not the case in the developed world. Another problem amputees face in a developing economy is the social stigma attached to amputees; most are seen as social outcasts, such that in some parts of Nigeria amputees are not even given the traditionally accepted decent burials that is seen as the birth right of every individual.⁸ These probably explain why most patients find it difficult to give consent for the procedure even in the face of life-threatening conditions like wet gangrene.⁸

In this series we recorded male preponderance of amputees; this is in keeping with similar studies in most regions of Nigeria.^{5,6,8} The peak age incidence in our series was in the fourth and fifth decade of life which is similar to the findings by Adotey and Jebbin in Port Harcourt Nigeria,⁹ but at variance with the report from Jos, Nigeria⁵, where the first decade was found as the peak age incidence in amputations following trauma. This could be explained by the fact that their series focused on only amputations following trauma.

In this series trauma is the leading indication for amputation. This is at variance with an earlier study in our hospital more than a decade ago which reported malignancy as the leading indication for amputation.¹⁰ This study has shown a change in that pattern. As the results in Table II show, trauma is now the leading cause which is in

keeping with other studies conducted in other parts of this country.^{6,8,9} These changes could be explained by the increase in the number of vehicles plying our roads when compared to the situation 15 years ago. Another possible explanation could be the fact that, due to lack of Orthopaedic surgeons in this centre at the period of the study most gangrenous limbs and other severe injuries to the limbs were referred to other centres. Like some other series,^{10,12} diabetic septic foot ranked third as an indication for amputation. Prophylactic foot care and hygiene, aggressive antibiotic treatment, proper wound excision (debridement), frequent dressings, coupled with control of blood sugar should all add together to minimize the incidence of amputations in diabetics.¹¹ Our series found some cases of amputation due to peripheral vascular disease which contrasts the findings of the earlier study reported from this centre¹⁰ which did not include a single case. This could probably be due to increased awareness of the availability of Orthopaedic services by the community. This finding is similar to that of other workers in the other parts of Nigeria.^{7, 11} Our finding of only one patient using prosthesis and majority of the patients being lost to follow up highlight the poor rehabilitation and follow up habit in this environment. This is not peculiar to this environment alone as highlighted by the work of Kidmas *et al*, in Jos, Nigeria.⁵ Post-traumatic TBS gangrene in this series show some improvement when compared to the findings of the earlier study.¹⁰

In conclusion, the efforts expended on preventing amputation in those parts of the world where facilities for rehabilitation are scarce or unaffordable can not be over emphasized. In most cases amputation on most patients in Nigeria spell doom to that person as well as the extended family that more often than not depend on that individual for survival. Strict enforcement of existing traffic regulations, targeted health educational campaigns as well as involvement of Non Governmental Organizations in assisting amputees with procurement of prostheses and subsequent rehabilitation will go a long way in saving a lot of limbs and the many lives that depend on those amputees.

References

1. Solomon L, Warwick DJ, Nayagam S (eds). Orthopaedic Operations. In: Apley's System of Orthopaedics and Fractures. 8th Edition. London: Arnold publishers, 2001; 255-274.
2. Christie J. Amputations. In: Rintoul RF (ed). Farquharson's Textbook of Operative Surgery. 8th Edition. London: Churchill Livingstone, 1995; 213-245.

3. Dougall J. Amputations, Prostheses and wheelchairs. In: Robert B D, George B (eds). Mercer's Orthopaedic Surgery. 9th Edition. London: Arnold Publishers, 1996; 1255-1284.
4. Unwin N. Epidemiology of lower extremity amputation in centres in Europe, North America and East Asia. The Global Lower Extremity Amputation Study Group. Br J Surg 2000; 87: 328-337.
5. Kidmas AT, Nwadiaro CH, Igun GO. Amputations following traumatic limb injuries in Jos, Nigeria. Highland Medical Research Journal 2004; 2(1): 56-60.
6. Yinusa W, Ugbeye ME. Problems of amputation surgery in a developing country. Int Orthop 2003; 27(2): 121-4.
7. Ekere AU, Chinenye S, Dodiya-Manuel A. The Diabetic foot-a review. Nigerian Journal of Orthopaedics and Trauma 2003; 2(1): 4-10
8. Ekere AU. The scope of extremity amputations in a private hospital in the South-South region of Nigeria. Niger J Med 2003; 12(4): 225-8.
9. Adotey JM, Jebbin NJ. Lower extremity amputations in Port Harcourt: a retrospective study. Nigerian Journal of Orthopaedics and Trauma 2002; 1: 29-33.
10. Holcombe C, Hassan S. Major limb amputation in Northern Nigeria. Br J Surg 1991; 78(7): 885-6.
11. Jenyo MS, Diya KS, Olakulehin OA. Limb amputations in Osogbo, Nigeria. Afr J Trauma 2004; 2: 80-2.
12. Onuba O, Udoidiok E. The scope of amputation in the developing countries. Postgrad Doc Afr 1989; 11: 118-21.