



E-ISSN: 2616-3470
P-ISSN: 2616-3462
© Surgery Science
www.surgeryscience.com
2019; 3(4): 514-516
Received: 11-08-2019
Accepted: 15-09-2019

Dr. C Hemanth Mahesh
Post Graduate, Department of
General Surgery, Narayana
Medical College, Nellore, Andhra
Pradesh, India

Dr. B Yochitha
Post Graduate, Department of
General Surgery, Narayana
Medical College, Nellore, Andhra
Pradesh, India

A clinical study on lower limb amputations

Dr. C Hemanth Mahesh and Dr. B Yochitha

DOI: <https://doi.org/10.33545/surgery.2019.v3.i4i.294>

Abstract

Introduction: Limb amputation is one of the commonly done surgical procedures. Bleeding, shock and sepsis were common risks in the olden days. Amputation should not be considered as a failure of treatment. They are lifesaving procedure during trauma, PVD, and for malignancies. Post amputation prosthesis management is a team approach with a surgeon, physician, physiotherapist, prosthetist, social worker to prevent complications.

AIM: To know the various indications and post - operative complications of amputations.

Methodology: A prospective observational study done in Narayana Medical College and Hospital Nellore during August 2017 to July 2019. Patients who underwent amputations were selected on simple random technique and analysed.

Results: In the study mean age was 33.4 years. Diabetes accounts the major cause of amputation in this age group. In the study males were 37 (74%) and females were 13(26%). Forefoot amputation was commonly done procedure. Stump infection was the common complication in the post-operative period.

Conclusion: In the era of developed surgical techniques, anaesthesia and rehabilitation methods amputation surgeries are with less procedural morbidity and in the post-operative period. Diabetes, PVD, RTA, tumours are common cause of amputations.

Keywords: Forefoot amputation, below knee above knee amputation, Diabetic foot

Introduction

Limb amputation is one of the commonly done surgical procedures in the general surgical practice. Bleeding, shock and sepsis were common risks in the olden days. Improvements in the surgical equipment, techniques, anaesthesia made them comfortable^[1, 2].

30,000-40,000 amputations were performed yearly in the United States. 1.6 million individuals were estimated to be without limb by 2005 and by 2050, this is expected to rise to 3.6 million^[3]. Amputation should not be considered as a failure of treatment. They are lifesaving procedure during severely traumatized limb, peripheral vascular disease with gangrene and rest pain, and for malignancies^[4, 5].

Main problem with amputation is the post-surgical trauma to the patient, problem with insufficient rehabilitation, follow up problems, stump infection or trauma, change in the life style of the individual^[6].

Post amputation prosthesis management is a team approach with a surgeon, physician, physiotherapist, prosthetist, social worker to prevent complications, method of walking with prosthesis, application, removal, pressure sores etc^[7, 8].

Aims and Objectives

1. To know the various indications for amputations
2. Post-operative complications during the stay and a short-term follow-up of 6 months

Methodology

This is a prospective observational study done in Narayana Medical College and Hospital Nellore during the period from August 2017 to July 2019.

Inclusion criteria: Patients who underwent lower limb amputations

Exclusion criteria: patients who are not willing for participation
Patients were selected on simple random technique. Detailed history, contributing factors,

Corresponding Author:
Dr. C Hemanth Mahesh
Post Graduate, Department of
General Surgery, Narayana
Medical College, Nellore, Andhra
Pradesh, India

comorbidities, indications for amputations, post-operative say and complications during the stay, short term complications during the study period of 6 months follow up were recorded and analysed.

Statistics: Microsoft excel sheets were used for entering the data. Mean, percentages and averages were used to describe the results.

Results

Table 1: Age distribution of the cases

Age in years	No of cases	Percentages
11-20	1	2
21-30	3	6
31-40	11	22
41-50	9	18
51-60	17	34
>60	9	18
Total	50	100

In the study males were 37 (74%) and females were 13(26%)

Table 2: Indications for Amputation

Indications	No of cases	Percentages
Peripheral vascular disease	13	26
Diabetic foot	31	62
Trauma	3	6
Tumours	3	6

Table 3: Level of Amputation

Level	No of cases	Percentages
Fore foot amputation	24	48
Below knee amputation	21	42
Above knee amputation	5	10

Table 4: Post-operative complications

Complications	No of cases	Percentages
Stump infection	17	34
Revision amputation	13	26
Mortality	3	6

Discussion

Extremity amputations could be done for vascular pathology, trauma, tumors, infections, congenital deformities [1, 2].

Vascular disease is a leading cause in the United States [9, 10, 11, 12, 13, 14] usually associated with diabetics in elderly smokers. Severe traumatized limb with compound fractures, vascular and neural damage can be managed with amputation than repairing which ends up in painful, non-function limbs [15].

In our study majority of the cases were in the 51-60 years age. Mean age was 33.4 years. Diabetes accounts the major cause of amputation in this age group. In the study males were 37 (74%) and females were 13(26%).

In Chalya *et al* [16] study, in a total of 162 patients the mean age was 28.30 ± 13.72 days, Males outnumbered females by a ratio of 2:1.

In Ekere AU study [20] in 34 cases, male to female ratio was 2.1:1. The patients were between 20- 40 years with 67.6%.

Diabetic foot was the leading cause of amputation in our study accounting for around 62% and majority undergone forefoot amputation followed by infection of the stump and revision and 2 cases had below knee amputations, above knee amputation in one case.

Trauma was noted in 2 cases of 21-30 years age and in 51-60 years 1 case. Below knee amputation was done in 2 cases and 1 case had above knee amputation.

Two cases of Squamous cell carcinoma in the chronic ulcer and a case of case of marjolins ulcer were noted and the cases had above knee amputation.

Post-operative stump infection was the common complaint noted in 34% of the cases. Revision amputation was done in 26% and 3 cases died among the study 2 were suffering from PVD and 1 Diabetes. Cause of death was cardiac event associated with DM and vascular pathology in the coronary system.

In Chalya *et al* [16] study in a total of 162 patients diabetic foot complications requiring amputation was in 41.9%, trauma in 38.4% and vascular disease in 8.6%. Below knee amputation was done in 46.3%. Revision amputation rate was 29.6%. Surgical site infection was the most common complication accounting for 21.0%. Mortality rate was 16.7%.

In Paudel B *et al* [17] RTA (74.29%) in was the common cause in adults, postburn contracture (29.54%), Congenital limb conditions (22.72%), Spina bifida with trophic ulcers (20.45%), Tumor (13.63%), Chronic Osteomyelitis (6.81%), Trauma (4.54%) and Arthrogryposis (2.27%) were the other causes.

In Essoh JB *et al* [18] study in a total of 160 limb amputations 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.

In Kidmas AT *et al* [19] in a total of 94 amputations in 87 patients, Trauma, diabetic foot sepsis and malignant conditions of the limb were the main indications in 26(29.9%), 23(26.4%) and 20(23%) patients respectively. Others were peripheral vascular gangrene (PVG) in 9.2%; chronic osteomyelitis 3.5%; chronic leg ulcers 3.5%; Ainhum 3.5% and snake bite 1.1%. Above knee amputation was done in 48.9%, below knee amputation in 37.2%. Mortality was in 12.6%.

In Ekere AU study [20] in 34 cases, Trauma was 70.5%, RTA in 47%. Lower limb amputations were commoner (n = 24) than upper limb amputations (n = 10). Below knee amputation was the commonest procedure performed.

In Masood J *et al* [21] in 53 patients with major limb amputation, mean age was 47.49 years. Complications of diabetes in 29 (54.7%) patients, trauma in 22(45.3%) patients were the cause. Additional procedures preformed were debridement in 26 (49%) patients, split skin grafting in four (7.5%) and vascular repair in one (1.9%) patient. Mortality was around 1.9%.

Conclusion

In the era of developed surgical techniques, anaesthesia and rehabilitation methods amputation surgeries are with less procedural morbidity and in the post-operative period.

Diabetes account for the most common cause of amputation in the elderly complicated with cardiovascular events increasing the mortality and revision surgeries.

Road traffic accidents in the machinery era, peripheral vascular disease with gangrene; tumours are the other causes of amputations.

With good rehabilitation methods patients can be managed effectively with prosthetic limbs.

References

1. Murdoch G, Wilson AB Jr, eds. Amputation: Surgical

- Practice and Patient Management. St Louis: Butterworth-Heinemann Medical, 1996.
2. Amputations of the lower extremity. Azar FM, Beaty JH, Canale ST, eds. *Campbell's Operative Orthopaedics*. 13th ed. Philadelphia: Elsevier. 2017; 1:674-85.
 3. Ziegler-Graham K, MacKenzie EJ, Ephraim PL, Trivison TG, Brookmeyer R. Estimating the prevalence of limb loss in the United States: 2005 to 2050. *Arch Phys Med Rehabil*. 2008; 89(3):422-9. [Medline].
 4. Eardley WG, Taylor DM, Parker PJ. Amputation and the assessment of limb viability: perceptions of two hundred and thirty two orthopaedic trainees. *Ann R Coll Surg Engl*. 2010; 92(5):411-6. [Medline].
 5. Higgins TF, Klatt JB, Beals TC. Lower Extremity Assessment Project (LEAP)--the best available evidence on limb-threatening lower extremity trauma. *Orthop Clin North Am*. 2010; 41(2):233-9. [Medline].
 6. Waters RL, Perry J, Antonelli D, Hislop H. Energy cost of walking of amputees: the influence of level of amputation. *J Bone Joint Surg Am*. 1976; 58(1):42-6. [Medline]. [Full Text].
 7. Matsen SL, Malchow D, Matsen FA 3rd. Correlations with patients' perspectives of the result of lower-extremity amputation. *J Bone Joint Surg Am*. 2000; 82-A(8):1089-95. [Medline].
 8. Pandian G, Kowalske K. Daily functioning of patients with an amputated lower extremity. *Clin Orthop Relat Res*. 1999; 361:91-7. [Medline].
 9. Lipsky BA, Berendt AR, Deery HG, Embil JM, Joseph WS, Karchmer AW, *et al*. Diagnosis and treatment of diabetic foot infections. *Clin Infect Dis*. 2004; 39(7):885-910. [Medline]. [Full Text].
 10. American Diabetes Association. Peripheral arterial disease in people with diabetes. *Diabetes Care*. 2003; 26 (12):3333-41. [Medline]. [Full Text].
 11. Carter SA, Tate RB. The value of toe pulse waves in determination of risks for limb amputation and death in patients with peripheral arterial disease and skin ulcers or gangrene. *J Vasc Surg*. 2001; 33(4):708-14. [Medline].
 12. Boyko EJ, Monteiro-Soares M, Wheeler SGB. Peripheral arterial disease, foot ulcers, lower extremity amputations, and diabetes. Cowie CC, Casagrande SS, Menke A, *et al*, eds. *Diabetes in America*. 3rd ed. Bethesda, MD: National Institutes of Health, NIH Pub No. 2017, 17-1468. Chap 20. [Full Text].
 13. Burgess EM, Matsen FA 3rd, Wyss CR, Simmons CW. Segmental transcutaneous measurements of PO₂ in patients requiring below-the-knee amputation for peripheral vascular insufficiency. *J Bone Joint Surg Am*. 1982; 64(3):378-82. [Medline]. [Full Text].
 14. Tintle SM, Forsberg JA, Keeling JJ, Shawen SB, Potter BK. Lower extremity combat-related amputations. *J Surg Orthop Adv*. 2010; 19(1):35-43. [Medline].
 15. Parker K, Kirby RL, Adderson J, Thompson K. Ambulation of people with lower-limb amputations: relationship between capacity and performance measures. *Arch Phys Med Rehabil*. 2010; 91(4):543-9. [Medline].
 16. Chalya *et al*. Major limb amputations: A tertiary hospital experience in north western Tanzania. *Journal of Orthopaedic Surgery and Research*
 17. Paudel B, Shrestha BK, Banskota AK. Two faces of major lower limb amputations. *Kathmandu University Medical Journal*. 2005; 3(11):212-216.
 18. Essoh JB, Bamba I, Dje Bi Dje V, Traore A, Lambin Y: Limb amputations in adults in an Ivorian Teaching Hospital. *Niger J Ortho & Trauma*. 2007; 6(2):61-63.
 19. Kidmas AT, Nwadiaro CH, Igun GO: Lower limb amputation in Jos, Nigeria. *East Afr Med J*. 2004; 81:427-429.
 20. 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.
 21. Masood J, Irfan A, Ghulam M: Current indications for major lower limb amputation. *Pakistan J. Surg*. 2008; 24(4):228-231.