Amputations in General Surgical Practice

I U R KHAN M A SHAFIQ K IRSHAD
Department of Surgery, K. E. Medical College/Mayo Hospital, Lahore
Correspondence to Dr. Intesar Ur Rashid Khan, Senior Registrar, intesarurrashidkhan@hotmail.com

Amputation is still often viewed as a failure of treatment. The responsibility for performing an amputation may even fall on the most junior member of the surgical team. Whatever the reason for extremity amputation, it should not be viewed as a failure of treatment. Amputation can be the treatment of choice for severe trauma, vascular disease, and tumors. In our setup amputations for vascular and diabetic complications fall under the domain of general surgeons **Objective:** The purpose of study was to determine the age and sex distribution, incidence of diseases that resulted in amputations, and the level of amputations done in them. **Methods**: A descriptive study on one hundred patients undergoing limb amputations in general surgical practice at department of Surgery, Mayo hospital Lahore. **Inclusion Criteria:** All the patients presented to general surgical emergency/OPD with limb pathology **Exclusion Criteria:** Patients with bone tumors and isolated limb trauma (referred to orthopedic unit). **Conclusion:** Most amputations in our study were performed in elderly persons for PVD, Diabetes mellitus being the leading cause

Key Words: Amputations, above knee, below knee.

Amputation is one of the oldest known surgically performed procedures. The original surgical principles as described by Hippocrates remain true today. Refinements of surgical technique such as hemostasis, anesthesia, and improved perioperative conditions have occurred, but only relatively small technical improvements have been made.

Although a diseased limb can be removed quite readily, resolving the problem of the extremity, the care does not end there. Amputation must be performed with great care and be considered a reconstructive procedure, similar to e.g. mastectomy (amputation of the breast), rather than an ablative procedure. The surgery must be performed well to ensure that the patient is able to wear prosthesis comfortably. Knee joint salvage enhances rehabilitative efforts and decreases the energy expenditure required for ambulation.

The patient must learn to walk with prosthesis, apply and remove the prosthesis, care for the prosthesis, monitor skin and any pressure points, ambulate on difficult terrain, and use the commode at night. Because of the complexity of these issues, the treatment team should include the surgeon, the primary care physician, a physical therapist, an expert prosthetist and a social worker.

The higher the level of lower limb amputation, the greater the energy expenditure required for walking. As the level of amputation moves proximally, the walking speed of the individual decreases, and the oxygen consumption increases. For most people who have undergone transtibial (B/K) amputations, the energy cost for walking is not much greater than that required for persons who have not undergone amputations. For those who have undergone transfemoral (A/K) amputations, the energy required is 50-65% greater than that required for those who have not undergone amputations. Additionally, those with PVD who have undergone transfemoral (A/K) amputations may have cardiopulmonary or systemic disease and require maximal energy for walking, making independence difficult to maintain.

Table1.Energy Expenditure for Amputation

Amputation Level	Energy Above Baseline %	Speed, m/min	Oxygen Cost, mL/kg/m
Long transtibial	10	70	0.17
Average transtibial	25	60	0.20
Short transtibial	40	50	0.20
Bilateral transtibial	41	50	0.20
Transfemoral	65	40	0.28
Wheelchair	0-8	70	0.16

Amputation wound healing is a concern because most amputations are performed for compromised circulation (e.g., PVD, damaged soft tissue envelope in trauma). The skin is a very important factor in the ambulatory ability and ultimate outcome for the person who has undergone an amputation. The soft tissue envelope of the residual limb now becomes the proprioceptive end organ for the interface between the residual extremity and the prosthesis. For effective ambulation, this envelope should consist of sufficient mass of mobile nonadherent muscle and full-thickness skin and subcutaneous tissue that can accommodate axial and shear stress within the prosthetic socket

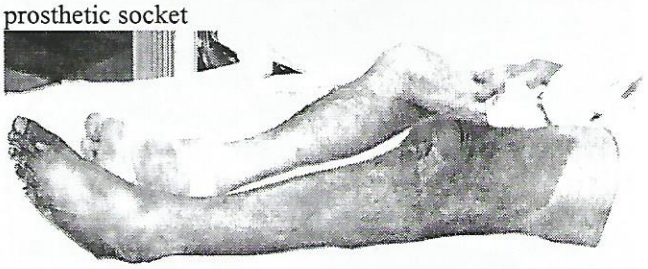

Fig.1. Ischemic Gangrene→A/K Amputation.

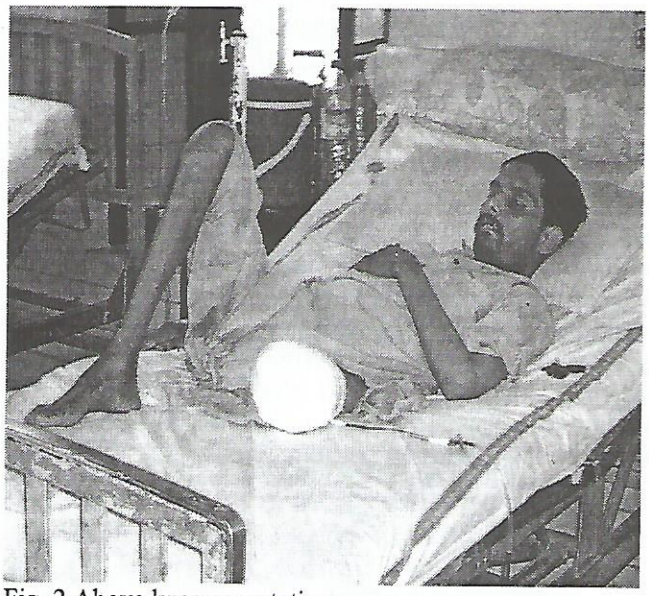

Fig. 2.Above knee amputation

Fig.3. Diabetic foot→B/K amputation

Fig 4. Below knee Amputation

Fig. 5. Gas gangrene→A/K amputation

Fig. 6 Electric Burns→forefoot amputation

Fig. 7 Transmetatarsal Amputation

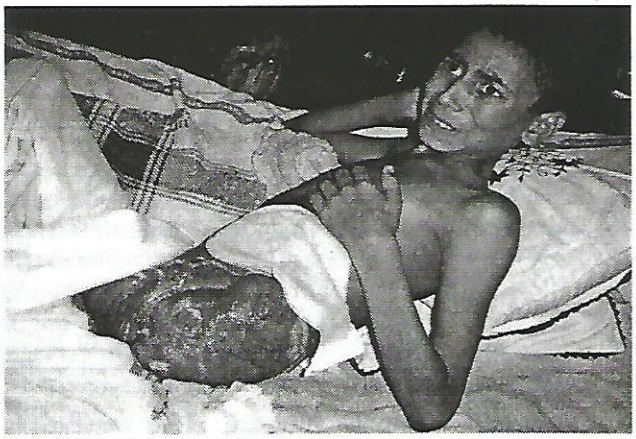

Fig. 7 Hip Disarticulation

Fig.8. Early Rehabilitation

Study: One hundred patients, who presented to General surgical unit last year, were picked up and study was done. All the patients presented to general surgical emergency/OPD, with limb pathology except bone tumors and isolated limb trauma (referred to orthopedic unit) were included in the study. The purpose of study was to determine the age and sex distribution, incidence of diseases that resulted in amputations, and the level of amputations done in them.

Table2. Sex distribution (n=100)

Sex	(n=)
Females	59
Males	41

Graphic distribution of age

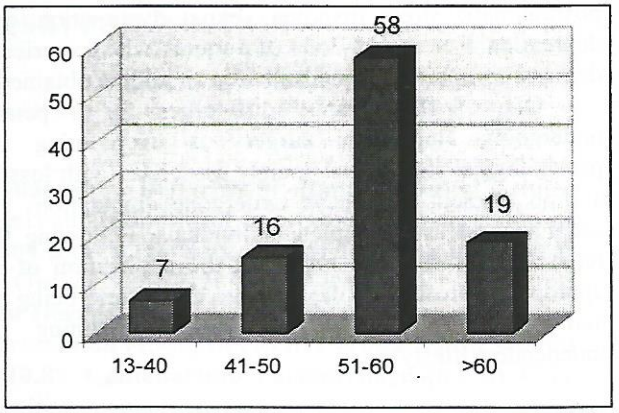

Table 5. Type/level of Amputation (n=100)

Level Of Amputation	(n=)
Ray Amputation	43
Transmetatarsal	5
Above Knee(Transfemoral)	13
Below knee(Transtibial)	37
Hip disarticulation	2
Total (n)	100

Table 6: Etiological Distribution (n=100)

Etiological Factor	(n) =
Peripheral Vascular Disease	
a) Diabetes Mellitus	52
b)Limb Ischemia	21
Intravenous drug users	17
Associated Trauma	04
Clostridial myonecrosis	03
Electrical Burns	03

Discussion:

The success of amputation surgery is multifactorial in terms of functional and emotional satisfaction. The goal is to achieve a useful residual limb in an individual who is active with a positive attitude, who accepts the amputation, and who continues to be a productive member of society.

Most amputations in the United States are performed in elderly persons for PVD. The associated mortality rate is 20% within the first year and 40% within 5 years. This high mortality rate creates a difficulty with follow-up and documentation of functional outcome, and studies are minimal and mostly incomplete.

In a 2000 review to assist in patient management, Matsen et al attempted to identify factors that correlate with the perceived amputation result. Residual limb length made no difference to patients' perceptions. Factors that appeared to influence patients' perception included condition of the contralateral limb; comfort of the residual limb; comfort, function, and appearance of the prosthesis; social factors; and the ability to participate in recreational activities. Additional

emotional and physical impairment issues are posttraumatic stress disorder, sexual dysfunction, and depression. For the 25-35% of patients who experience depression, appropriate consultation should be obtained.

One of the greatest difficulties for a person undergoing amputation surgery is overcoming the psychological stigma that society associates with loss of a limb. Persons who have undergone amputations are often viewed as incomplete individuals. Following the removal of a diseased limb and the application of an appropriate prosthesis, the patient can resume being an active member of society and maintaining an independent lifestyle.

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