

# Pattern of Diabetic Foot Lesions and Surgical Procedures for Management

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## ABSTRACT

**Objectives:** To find out patterns of diabetic foot lesions and variety of surgical procedures performed in our ward. To create awareness among diabetic patients for the care of their feet

**Setting:** This study was conducted at Ghurki trust teaching hospital Lahore

**Durational of study:** This study was conducted for 2 years i-e from December 2008 to January 2010

**Study design:** It was observational study

**Sample size:** During 2 years of my study period, 180 patient with diabetic foot lesions were admitted and managed according to the lesions

**Sampling technique:** Non- probability

**Inclusion criteria:** Both type 1 and type 2 diabetics having developed diabetic foot ulcer were included in the study

**Exclusion criteria:** Patients with pre-existing condition e.g. carcinoma, chronic eczema, varicose ulcers even diabetic were excluded from the study

**Results:** Out of 180 patients 126 were male and 54 were female as male are more active in life and more prone to get trauma. Majority patients (56%) were admitted through out patient department (OPD). 64 patients were on insulin, 102 were on oral hypoglycemic drugs and 14 patients were diagnosed first time during investigations. The cultures report of pus from wound showed staphylococcus was the most common organism. The majority wounds were classified as grade III and grade IV according to Meggit Wagner classification. The most common surgical procedure was debridement of wound and incision drainage with curettage.

**Conclusion:** The commonest lesion was ulceration of foot with bone involvement and the most common treatment was debridement and curettage of the wound.

**Key words:** Diabetic foot, amputation, neuropathy, inj insulin

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## INTRODUCTION

The world health organization (WHO) estimates that more than 180 million people worldwide have Diabetes Mellitus. This number is likely to more than doubly by 2030. In Pakistan the prevalence of Diabetes mellitus in the urban versus the rural area was 6% in men and 3.5% in women against 6.9% in men and 2.5% in women respectively<sup>1</sup>. Up to 8% of patients with Diabetes Mellitus develop foot ulcers at some point in their lives<sup>2</sup>. Diabetic patient who have poor glycemic control may have more chances to develop foot ulceration. This complication has become more prevalent since advances in general medical care of Diabetes Mellitus particularly the discovery of insulin has prolonged the life expectancy of patient with this disease<sup>3</sup>. Many patients will go to require amputation a procedure with a high post operative morbidity and mortality, a high rate of secondary amputation, considerable health care cost and loss of quality of life<sup>4</sup>. Diabetic gangrene is due

to underlying predisposing factors and these factors are (a) trophic changes resulting from peripheral neuropathy (b) atheroma of the arteries resulting in ischemia (c) excess of glucose in the tissue which lower their resistance to infection including fungal infections<sup>5</sup>. The outcome of diabetic foot lesions is closely related to the severity of disease at presentation<sup>6</sup>. Common risk factors for amputation following ulceration includes the presence of peripheral vascular disease, severity of neuropathy, structural foot deformity and concomitant infection<sup>7</sup>. Extremity amputation occurs 10-30 times more frequently in diabetic patient compared to non diabetic foot patient and 70% lower limb amputation occur in people with diabetes, 85% of which follow foot ulceration<sup>8</sup>. Twelve percent (12%) of those above the age of 25 years in Pakistan suffer from diabetes and 10% have impaired glucose tolerance. The recent bulletin of international diabetes federation on "Diabetes in Pakistan" mentions high prevalence of associated risk factors to the ailment in the country with obesity at the top<sup>9</sup>. Providing patient education and early diagnosis can prevent it. Early

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referral and prompt treatment are important in management<sup>10</sup>.

**OBJECTIVE**

1. To find out patterns of diabetic foot lesions
2. To find Varsity of surgical procedures performed in our ward
3. To create awareness among patients for the care of feet

**PATIENTS AND METHODS**

This study was conducted at Ghurki trust teaching hospital Lahore for 2 years i.e., from December 2008 to January 2010. It was observational study. During 2 years of my study period 180 patients with diabetic foot lesions were admitted and managed according to the lesions. Sampling technique was non probability. Both type 1 and type 2 diabetics having developed diabetic foot ulcer were included in the study. Patients with pre-existing condition e.g. carcinoma, chronic eczema, varicose ulcers even diabetic were excluded from the study.

A Performa was made in which following information were recorded. History (name, age, sex, occupation, history of present illness, risk factors, insulin or non insulin dependent, type of diabetic control, rest pain, claudication, neuropathy ,smoking, alcoholism, past history of admission for diabetic foot lesions and family history of diabetes mellitus. Examination of feet were carried for hygiene, ulcers, gangrene, infection, trophic changes in skin and nail. For sensory and motor assessment complete neurological examination was done. Posterior tibial ant dorsalis pedis arteries were palpated for vascular integrity ,other clinical test included capillary filling test. Doppler study of peripheral pulse performed in case the pulses were not palpable. A detailed local examination of both feet were carried out and finding documented. Foot lesions were graded according to the Meggit Wagner classification

- Grade 0: high risk foot
- Grade 1: superficial ulcer skin deep
- Grade II: deep ulcer involving soft tissue but no bony involvement
- Grade III: ulcer extending to and involvement of bones
- Grade iv: localized gangrene(fore foot, heel, toe or heel)
- Grade v: gangrene of the entire foot

Complete blood profile, serum blood sugar, urine for sugar and proteins, culture and sensitivity of pus, serum urea and creatinine , X-rays chest, ECG for patient older than 40 years of age were carried

out. Blood sugars were monitored by blood sugar level .X-rays foot in deep ulcers were done to detect the osteomyelitis. Pus samples were taken for culture and sensitivity and broad spectrum antibiotic were started and changed according to the pus culture and sensitivity reports. All patients were given regular insulin according to sliding scale of blood sugar level. Daily dressing, wound debridement, incision and drainage, toe and ray amputations, mid tarsal amputation, some amputation below and above knee amputation. stump care and analgesia was given the highest priority. Foot and stump exercises patient education as well as other rehabilitation measures were taken for major amputees .Hospital stay of each patient was recorded. All the patient were followed up to see progress of diabetic foot lesions

**RESULTS**

During two years of my study period at Ghurki trust teaching hospital Lahore, 180 patients found having different types of diabetic foot lesions. Of these 180 patients 126(70%) patients were male and 54(30%) patients were female .out of these patients 104(58%) patients were in the age range of 51 to 70 years. Majority of the patients were admitted through out patient department OPD 98(56%) 68(36%) patient through emergency and rest 14(8%) were transferred or referred to from medical wards. Majority of the patients were taking oral hypoglycemic drugs, others were on insulin and few were diagnosed first time while being investigated for foot lesions (Table.1) However ,all patient were given inj insulin to control their diabetes and the other oral hypoglycemic agent were stopped . For the control of diabetes they were however referred to the medical specialist at the time of being sent home. The wound were classified according to the Meggit Wagner classification (Table.2). The culture reports of pus showed different organisms and the most organism was staphylococcus(Table.3). For various lesions different surgical procedures were performed .The commonest surgical procedures were debridement of wounds and incision drainage with curettage of wounds as majority of the wound were in Grade III and Grade IV (Table.3).

Table.1 status of the disease control before admission

Mode of treatment	Male	Female	Total	%
On insulin	46	18	64	36
On oral hypoglycemic drugs	70	32	102	57
Undiagnosed before admission	10	4	14	8
Total	126	54	180	100

Table-2: Grades of wounds according to Meggit Wagner Classification

Grade	Male	Female	Total	%
Grade 0	0	0	0	0
Grade I	12	9	21	12
Grade II	28	15	43	24
Grade III	60	15	75	42
Grade IV	18	12	30	17
Grade V	8	3	11	6
Total	126	54	180	100

Table 3: Various surgical procedures used for management of diabetic foot lesions

Surgical procedures	Male	Female	Total	%
Mild debridement	34	23	57	32
Incision drainage & curettage	43	18	61	34
Ray amputation	18	7	25	14
Mid tarsal amputation	10	3	13	7
Skin grafting	7	0	7	4
Syme's amputation	5	1	6	3
Below knee amputation	6	2	8	5
Above knee amputation	3	0	3	2
Total	126	54	180	100

**DISCUSSION**

Foot problems in patients with diabetes account for a large fraction of diabetic complications seen in clinical practice. Indeed, the development of foot ulcer amount for the greatest percentage of hospital admission among patient with diabetes<sup>11</sup>. In our study the majority of the patients are male who got foot lesion, the reason being the male in our society are more active in work and more prone to get trauma to foot. Studies have reported male sex as a significant risk factor for non healing foot ulcer<sup>12</sup>. Diabetic neuropathy (sensory, motor, and autonomic neuropathy) is the most prevalent diabetes-related complication that increases the risk of Diabetic foot diseases. More than 50% of patients with diabetes have some form of neuropathy<sup>13</sup>. In our study the majority patients were old age who got diabetic foot lesions as they have the long period of diabetes to cause complication. Foot lesion commonly occur in elderly and those with associated ailments like cardiac failure, renal failure etc<sup>14</sup>. The ideal outcome of foot ulcer care is to achieve healing without amputation. Avoidance of amputation is not necessarily the best outcome for an individual patient, as an amputation can improve a patient's

mobility and quality of life when compared with a chronic ulcer. The prevalence of foot ulcers among patients with diabetes is 12%; a 20-year cumulative incidence of lower limb ulcers in patients with type 1 diabetes approaches 10%, and 5% require amputation<sup>15</sup>. In our study the amputation rate was 21% this rate is higher than international study the cause is the patient needs awareness for the care of foot and they presented late for the management. The majority ulcers were involving the bones. Once a lesion has developed, the infection plays an important role in finding its outcome, whether the primary etiology is neuropathic, ischemic or a combination of two. The prevention is better than cure, if the diabetic patients are educated regarding their blood sugar control and care of the feet, the diabetic foot lesions can be reduced.

**CONCLUSION**

The commonest lesion was ulceration of foot with bone involvement and the most common treatment was debridement and curettage of the wound.

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