

ORIGINAL RESEARCH

Evaluation of cases of diabetic foot ulcers and their surgical management

¹Dr. O.P. Singh, ²Dr. Nayanshi Singh, ³Dr. Himanshu Singh

¹HOD & Senior Consultant, Department of Surgery, Divisional District Hospital, Gorakhpur, UP, India

²JR 1, Department Gyne & Obs, SRMS IMS, Bareilly, UP, India

³MBBS, SMC Unnao, UP, India

Corresponding author

Dr. O.P.Singh

HOD & Senior Consultant, Department of Surgery, Divisional District Hospital, Gorakhpur, UP, India

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ABSTRACT

Background: Diabetes mellitus has grown to pandemic proportions, affecting 194 million people worldwide. The present study was conducted to assess cases of diabetic foot ulcers and their surgical management. **Materials & Methods:** 85 patients of diabetic foot ulcers of both genders were evaluated for the general physical, local examination and Wagner's classification. **Results:** Out of 85, males were 52 and females were 33. Presentation was gangrene in 20, cellulites in 17 and ulcer in 48 cases. Classification was grade 0 was seen in 3, grade 1 in 7, grade 2 in 13, grade 3 in 16, grade 4 in 20 and grade 5 in 26 patients. Bacteria isolated was staphylococcus aureus in 62%, anaerobic cocci in 25%, gram negative organisms in 10% and beta haemolytic streptococci in 3%. The difference was significant ($P < 0.05$). The management done was incision and drainage in 5, skin grafting in 8, amputation was 46, debridement in 24 and sequestrectomy in 2 patients. The difference was significant ($P < 0.05$). **Conclusion:** Glycemic management is crucial because diabetic foot ulcers are a typical consequence in poorly managed diabetics.

Key words: diabetes mellitus, Diabetic foot ulcers, sequestrectomy

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INTRODUCTION

Globally, diabetes mellitus has grown to pandemic proportions, affecting 194 million people worldwide and is expected to increase in prevalence to 344 million by the year 2030.¹ Of these patients, between 2 and 6% will develop a diabetic foot ulcer yearly. Diabetic foot ulcers are main cause of hospitalization in diabetic patients. Patients with diabetes mellitus are at higher risk of lower extremity complications than their non diabetic counterparts.²

Age and the length of the sickness will both increase its occurrence. The goal is to preserve viable tissue once tissue damage has occurred in the form of ulceration or gangrene. Typically, diabetic foot ulcers are categorized using Wagner's system. The Wagner classification evaluates the depth of the ulcer and the occurrence of gangrene or osteomyelitis.³ Surgery has a number of objectives. The primary objective is to manage the severe infection in the hopes of saving the limb. To achieve this, a healthy wound bed must be created along with the drainage of any pus and the excision of any necrotic or infected tissues.⁴ The functional outcomes of the procedure must also be considered. Re-ulceration may result from aberrant pressure points caused by residual foot abnormalities.⁵

The surgeon should take into account the vascular status of the limb and the anatomic level at which a wound would be likely to heal. Furthermore, the surgeon must ensure that there is sufficient viable soft tissue to cover any deficits left by resections or amputations.⁶ The present study was conducted to assess cases of diabetic foot ulcers and their surgical management.

MATERIALS & METHODS

The present study consisted of 85 patients of diabetic foot ulcers of both genders. All enrolled patients gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. All the patients were evaluated for the general physical and local examination as well as systemic examination, Wagner's classification; Operative characteristics included: type of operations performed and post-operative complications. Routine blood examination, blood sugar test, urine sugar test, x ray of the part involved, culture & sensitivity of the discharge from the infection were also done. Data thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 85		
Gender	Males	Females
Number	52	33

Table I shows that out of 85, males were 52 and females were 33.

Table II Assessment of parameters

Parameters	Variables	Number	P value
Presentation	Gangrene	20	0.05
	Cellulites	17	
	Ulcer	48	
Wagner classification	Grade 0	3	0.91
	Grade 1	7	
	Grade 2	13	
	Grade 3	16	
	Grade 4	20	
	Grade 5	26	
bacteria isolated	Staphylococcus aureus	62%	0.01
	Anaerobic cocci	25%	
	Gram negative organisms	10%	
	Beta haemolytic streptococci	3%	

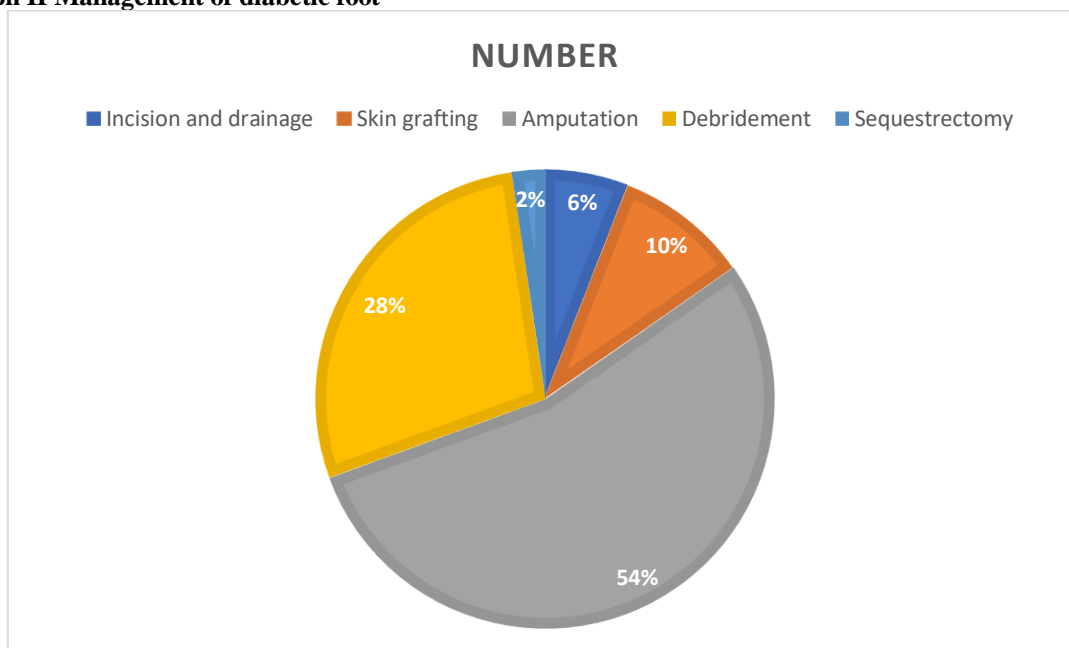
Table II shows that presentation was gangrene in 20, cellulites in 17 and ulcer in 48 cases. Classification was grade 0 was seen in 3, grade 1 in 7, grade 2 in 13, grade 3 in 16, grade 4 in 20 and grade 5 in 26 patients. Bacteria isolated was staphylococcus aureus in 62%, anaerobic cocci in 25%, gram negative organisms in 10% and beta haemolytic streptococci in 3%. The difference was significant (P< 0.05).

Table III Management of diabetic foot

Management	Number	P value
Incision and drainage	5	0.01
Skin grafting	8	
Amputation	46	
Debridement	24	
Sequestrectomy	2	

Table III, graph II shows that management done was incision and drainage in 5, skin grafting in 8, amputation was 46, debridement in 24 and sequestrectomy in 2 patients. The difference was significant (P< 0.05).

Graph II Management of diabetic foot



DISCUSSION

Diabetes over time might harm blood vessels or nerves. Diabetes-related nerve degeneration might result in foot loss. Blisters, sores, cuts, and blisters might not be felt.^{7,8} People with diabetes mellitus are more likely to get foot infections due to the compromised blood flow caused by microvascular illness, which is frequently associated with sensory loss from neuropathy. These infections range from straightforward, superficial cellulitis to persistent osteomyelitis.⁹ The most frequent cause of diabetes-related hospital admissions is foot wounds. Surgery is frequently the best course of action in these circumstances.^{10,11} The present study was conducted to assess cases of diabetic foot ulcers and their surgical management.

We found that out of 85, males were 52 and females were 33. Presentation was gangrene in 20, cellulites in 17 and ulcer in 48 cases. Classification was grade 0 was seen in 3, grade 1 in 7, grade 2 in 13, grade 3 in 16, grade 4 in 20 and grade 5 in 26 patients. According to Gupta et al¹², diabetic foot disease manifests more frequently in men who are older and have uncontrolled diabetes, the disease has been present for a longer period of time, and they have more co-morbid conditions than other patients. 38 patients (38%) had diabetics who needed insulin and 87 patients (87%) were receiving inconsistent care. A total of 58 additional patients (58%) had non-insulin dependent diabetes, of which 19 (70.0%) were having abnormal blood sugar levels. Treatment. The remaining 4 patients (4%) did not receive any medical care for their illness. The condition with the highest prevalence was grade 4, which affected 34 people. Grade 2 affected 22 patients, and Grade 3 affected 16 patients. According on the aforesaid Wagner classification, these individuals were treated. For 25 patients, conservative therapy included appropriate diabetes control, antibiotic coverage, and foot care. The remaining 75 patients had surgical intervention. Incision, drainage, and debridement of a foot abscess were performed on 41 (41%) of the patients, and 35 (35.0%) required some sort of amputation. Five (5%) individuals required multiple amputations.

We found that bacteria isolated was staphylococcus aureus in 62%, anaerobic cocci in 25%, gram negative organisms in 10% and beta haemolytic streptococci in 3%. Patel et al¹³ assessed the risk factors for complications in diabetic foot infection and looked at the effectiveness of various treatment options. The middle-aged group, typically in their fourth and fifth decades, was where the diabetic foot was discovered. There were 50 men and 50 women, and among them, 70% of patients had diabetic foot ulcer symptoms, 20% had diabetic foot cellulites, and 10% had diabetic foot gangrene. The most frequent side effect, affecting a total of 10 patients, was an infection at the surgery site.

We observed that the management done was incision and drainage in 5, skin grafting in 8, amputation was

46, debridement in 24 and sequestrectomy in 2 patients. Wong et al¹⁴ reported 87% success rate in limb salvage after using repeated 'piecemeal' debridements and herbal drinks. Dressing materials used include saline-soaked gauze dressings; moisture retaining dressings, optimize the wound environment and promote healing. Eneroth et al¹⁵ demonstrated that deep foot infections in diabetic patients are a heterogeneous entity, and the type of infection is related to the outcome. Amputation was required more often for patients with deep soft-tissue infection, either alone or in combination with osteomyelitis, than for those with osteomyelitis alone.

CONCLUSION

Authors found that glycemic management is crucial because diabetic foot ulcers are a typical consequence in poorly managed diabetics.

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