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Original Research Article.

Evaluation of Patients Undergoing Surgical Treatment for Diabetic Foot at a Tertiary Care Hospital

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ABSTRACT

Background: Diabetic foot is no longer a neglected complication, with extensive global research, guidelines, and multidisciplinary strategies improving prevention and management. Strong evidence supports offloading and negative-pressure wound therapy as effective treatments, forming the basis for the present study on surgical management of diabetic foot.

Materials & Methods: A total of 200 diabetic individuals with clinically diagnosed foot ulcers were included in the study. For each participant, comprehensive demographic information and detailed clinical profiles were documented. A structured proforma was utilized to ensure systematic recording of patient histories, including duration of diabetes, previous ulcer episodes, and associated risk factors. Thorough clinical assessment was performed prior to initiating surgical intervention, and treatment planning was tailored according to ulcer grade, extent of infection, vascular status, and overall patient condition.

Results: The mean age of patients was 53.9 years. Out of a total of 200 cases, males accounted for 121 (60.5%), while females represented 79 (39.5%). Debridement was the most frequently undertaken procedure, recorded in 105 patients (52.5%). Lower limb amputations were the next most common, with 85 minor amputations (42.5%) and 2 major amputations (1%). Less frequently performed procedures included skin grafting in 3 patients (1.5%), incision and drainage in 4 patients (2%), and sequestrectomy in 1 patient (0.5%).

Conclusion: Diabetes-related foot ulcers represent one of the most serious complications of diabetes mellitus, often resulting from a combination of peripheral neuropathy, peripheral vascular disease, and impaired wound healing. Diabetic foot ulcers not only compromise functional independence but also elevate the overall risk of premature death, making them a major public health concern in diabetes management.

Key words: Diabetic, Foot.

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INTRODUCTION

By 2015, the diabetic foot could no longer be regarded as the neglected complication of diabetes. Three decades earlier, research in this area was scarce, and no international forums were dedicated to the subject. Progress began with the initiation of the biennial Malvern Diabetic Foot meetings in 1986, followed by the establishment of the Foot Council by the American Diabetes Association in 1987, and the creation of the European Association for the Study of Diabetes Foot Study Group in 1998. The inaugural International Symposium on the Diabetic Foot was held in the Netherlands in 1991, soon leading to the formation of the International Working Group on the Diabetic Foot, which has since developed widely recognized guidelines for research and clinical management.[1-3] Since then, publications concerning diabetic foot disorders have grown exponentially in leading medical journals, creating a strong evidence base for many aspects of management. Despite this, proving the effectiveness of education alone in lowering the incidence of foot ulcers remains challenging. Nonetheless, education integrated within a multidisciplinary framework has demonstrated value in prevention. In terms of therapy, robust evidence confirms that mechanical offloading remains the most effective intervention for healing plantar neuropathic ulcers, and randomized controlled trials have also validated the role of negative-pressure wound therapy in managing complex post-surgical diabetic foot wounds.[4-6] Hence; the present study was conducted to evaluate patients undergoing surgical treatment for diabetic foot at a tertiary care hospital.

MATERIALS & METHODS

A total of 200 diabetic individuals with clinically diagnosed foot ulcers were included in the study. For each participant, comprehensive demographic information and detailed clinical profiles were documented. A structured proforma was utilized to ensure systematic recording of patient histories, including duration of diabetes, previous ulcer episodes, and associated risk factors. Thorough clinical assessment was performed prior to initiating surgical intervention, and treatment planning was tailored according to ulcer grade, extent of infection, vascular status, and overall patient condition. Patients with concomitant systemic illnesses or known drug hypersensitivities were excluded to avoid confounding factors. Following surgical procedures, outcomes were monitored and all findings were systematically entered and analyzed using SPSS statistical software, enabling interpretation of demographic distribution, clinical characteristics, and treatment responses in the study population.

RESULTS

Table 1 presents the demographic profile of the study population. The mean age of patients was 53.9 years. Out of a total of 200 cases, males accounted for 121 (60.5%), while females represented 79 (39.5%).

Table 2 summarizes the glycaemic profile of the participants. The mean HbA1c was 10.5%, with a corresponding mean random blood sugar (RBS) level of 283.3 mg/dL. The average duration of diabetes among patients was 12.3 years, reflecting poor long-term glycaemic control.

Table 3 depicts the types of surgical interventions performed. Debridement was the most frequently undertaken procedure, recorded in 105 patients (52.5%). Lower limb amputations were the next most common, with 85 minor amputations (42.5%) and 2 major amputations (1%). Less frequently performed procedures included skin grafting in 3 patients (1.5%), incision and drainage in 4 patients (2%), and sequestrectomy in 1 patient (0.5%).

Table 1: Demographic data

Demographic data	Number	Percentage
Mean age (years)	53.9 years	
Males	121	60.5
Females	79	39.5

Table 2: Glycaemic profile

Glycaemic profile	Number
Mean HbA1c (%)	10.5
RBS (mg/dL)	283.3
Mean duration of diabetes (years)	12.3

Table 3: Types of surgical treatment

Types of surgical treatment		Number	Percentage
Debridement		105	52.5 %
Lower limb amputation	**Minor amputation**	85	42.5%
	Major amputation	2	1%
Skin grafting		3	1.5%
Incision and drainage		4	2%
Sequestrectomy		1	0.5%

DISCUSSION

Diabetes mellitus is a complex metabolic disorder defined by persistent hyperglycemia, which arises from inadequate insulin secretion, impaired insulin action, or a combination of both mechanisms. In 2000, the World Health Organization reported that approximately 171 million individuals worldwide were affected by diabetes, and projections indicate that this figure may double by 2030 due to the escalating prevalence. The disrupted metabolic balance in diabetic patients leads to secondary pathophysiological consequences involving multiple organ systems, thereby creating a substantial strain on healthcare resources. Diabetes is linked with a wide range of complications, including retinopathy, neuropathy, nephropathy, atherosclerosis, and diabetic foot ulcers. These complications primarily stem from vascular dysfunction and compromised circulation, placing the foot at particularly high risk compared to other diabetic complications.[7, 8] Surgical management has emerged as a key approach for addressing chronic deformities and ulcerations in individuals with diabetes mellitus. Rather than being limited to cumbersome braces or corrective footwear, many deformities can now be effectively treated through surgery. While such interventions in high-risk patients carry inherent risks, outcomes are generally favorable when careful patient selection and thorough preoperative evaluation are undertaken.[9, 10] Hence; the present study was conducted to evaluate patients undergoing surgical treatment for diabetic foot at a tertiary care hospital.

In the present study, mean age of patients was 53.9 years. Out of a total of 200 cases, males accounted for 121 (60.5%), while

females represented 79 (39.5%). Table 2 summarizes the glycaemic profile of the participants. The mean HbA1c was 10.5%, with a corresponding mean random blood sugar (RBS) level of 283.3 mg/dL. The average duration of diabetes among patients was 12.3 years, reflecting poor long-term glycaemic control. Kumar et al, in a previous study, assessing patients undergoing surgical treatment for diabetic foot. A total of 100 diabetic patients who reported with diabetic foot ulcer were enrolled. Complete demographic and clinical details of all the patients were obtained. A Performa was made, and detailed clinical history was analyzed. Surgical planning was done and commenced. Subjects with history of any other systemic illness and any other known drug allergy were excluded from the present study. All the results were recorded and analyzed using SPSS software. Mean age of the patients was 41.8 years. 63 percent of the patients were males while the remaining were females. 58 percent of the patients were from rural residence. Debridement was done in 31 percent of the patients, while lower limb amputation was done in 53 percent of the patients. Skin grafting was done in 8 percent of the patients while incision and drainage was done in 6 percent of the patients. Sequestrectomy was done in 2 percent of the patients.[10]

In the present study, debridement was the most frequently undertaken procedure, recorded in 105 patients (52.5%). Lower limb amputations were the next most common, with 85 minor amputations (42.5%) and 2 major amputations (1%). Less frequently performed procedures included skin grafting in 3 patients (1.5%), incision and drainage in 4 patients (2%), and sequestrectomy in 1 patient (0.5%). One of the most significant advances in diabetic foot ulcer (DFU) management has been the development of novel wound dressings, designed to maintain moisture balance, sequester proteases, stimulate growth factors, provide antimicrobial action, enhance oxygen permeability, and promote autolytic debridement for granulation and re-epithelialization. While no single dressing meets all clinical needs, selection depends on ulcer etiology, wound depth, exudate level, infection status, pain, and anatomical location. Dressings are broadly classified as passive, active, or interactive: passive types mainly protect and absorb exudates in acute wounds, whereas active and interactive dressings influence wound physiology by stimulating cellular activity and growth factor release, making them preferable for chronic DFUs due to their ability to adapt, sustain moisture, and accelerate healing (Yazdanpanah et al., 2015).[11]

CONCLUSION

Diabetes-related foot ulcers represent one of the most serious complications of diabetes mellitus, often resulting from a combination of peripheral neuropathy, peripheral vascular disease, and impaired wound healing. Diabetic foot ulcers not only compromise functional independence but also elevate the overall risk of premature death, making them a major public health concern in diabetes management.

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