



Study of various surgical Modalities of management of Diabetic Foot.

KEYWORDS

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ABSTRACT

50 cases of diabetic foot lesions were examined. In the present study 22(44%) out of 50 were from middle age group i.e. in the 4th and 5th decade of their life. Diabetic foot lesions are commonly found in the middle aged group. In the present study, 44(88%) are males and 6(12%) are females. Higher incidence of male diabetic foot lesions is mainly due to the trauma and smoking.

Most of the patients presented with forefoot involvement (56%). Sensory neuropathy was the most frequent component. Mixed infection with both aerobes and anaerobes was the most common. Nosocomial infections were seen in patients having prolonged duration of stay following surgery. Rapid control of infection led to decreased insulin requirement and rapid glycemic control contained the spread of infection. Third generation cephalosporins and amoxicillin with clavulanic acid were commonly used for diabetic foot lesions along with metronidazole and aminoglycosides. The main presenting feature was cellulitis of the foot or plantar abscesses and in some patients; wet gangrene. Surgical debridement with or without Ray amputation of the gangrenous toes was the most commonly done surgical procedure. Transmetatarsal or Syme's amputation was less commonly performed. The mean duration of recovery was 4 weeks. Higher education regarding foot care forms an integral part of surgical management.

INTRODUCTION

- The prevalence of Diabetes Mellitus is growing. There is steady increase in type 2 diabetes, especially among young and obese persons.
- India alone currently counts over 35 million people with diabetes. [3]

DEFINITION OF DIABETIC FOOT: Feet of the diabetic patients that have pathological consequences, including infection, ulceration, and /or destruction of deep tissues associated with neurological abnormalities and various degree of peripheral vascular disease in the lower limb. [5]

Foot infections are a major source of morbidity and a leading cause of hospitalization for persons with diabetes.

Ulceration, infection, gangrene, and amputation are significant complications of the diabetic foot.

The diabetic foot can be classified clinically:-

Infective type
Ischemic type
Neuropathic type
Mixed type [3]

Majorities of foot ulcer have both ischemic and neuropathic component.

More than 60% of lower limb amputations are due to

diabetes. The rates of non-traumatic lower extremities amputation in people with diabetes remain 10-20 fold higher.

The most common cause of amputation in diabetes is ischemia & infection. [5]

OBJECTIVES

- To study various modes of surgical treatment of diabetic foot.
- To study outcome & prognosis of diabetic foot patients.

METHODOLOGY

- The present study was conducted in a teaching institute in the department of surgery involving all the 50 cases of diabetic foot patients.
- Data was collected by taking proper history and clinical examination of foot, wound or ulcer. All the details were recorded on a preformed performa.
- Age, sex, duration and type of diabetes, examination findings, grade, investigation including blood sugar, swabs from ulcer, X ray of foot, Doppler/ Angiographic study and treatment carried out were recorded.
- The patients were evaluated and managed by classifying the disease according to WAGNER's classification for diabetic foot. Surgical methods of treatment were used. Data was compiled and frequencies were calculated.
- The patients were followed up to 6 months of duration

WAGNER classification of foot ulcers [5]

Grade Description of the ulcer

Grade 0 - Pre - or post - ulcerative lesion completely epithelialized

Grade 1 - Superficial, full - thickness ulcer limited to the dermis

Grade 2 - Ulcer of the skin extending through the subcutaneous tissue with exposed tendon or bone & without osteomyelitis or abscess formation

Grade 3 - Deep ulcers with osteomyelitis or abscess formation

Grade 4 - Localized gangrene of the toes or the forefoot

Grade 5 - Foot with extensive gangrene

MANAGEMENT

- Wound bed preparation
- Surgical debridement
- Enzymatic debridement with papaine, bacterial collagenases and trypsin .
- Wound dressings

Negative pressure wound therapy (NPWT) : [13]

Principle : It is a vacuum assisted method for ulcer care using a negative pressure of 60-125 mm Hg intermittently on the wound bed.

Mechanism : NPWT in particular optimizes blood flow, decreases tissue edema and removes exudate, proinflammatory cytokines and bacteria causing faster rate of ulcer healing and faster granulation tissue formation.

BEFORE

AFTER



Relieve pressure on the foot/ off loading:- [1]

- Total Contact Casts were given.
- Wheel chairs were used as and when required
- Therapeutic shoes were used in few cases.



Total Contact Cast

For control of infections,

Broad spectrum antibiotics were given.

Pus culture were sent and sensitivity detected for specific antibiotics.

For control of ischaemia-

drugs and revascularization procedures.

Amputation as and when required.

Medical management-

control of Diabetes and other medical diseases.

RESULTS

AGE DISTRIBUTION

AGE IN YEARS	NO OF CASES	PERCENTAGE
UP TO 40	07	14
40 TO 50	09	18
50 TO 60	13	26
60 TO 70	17	34
70 TO 80	04	08
TOTAL	50	100

In the present study 22(44%) out of 50 were from middle age group i.e. in the 4th and 5th decade of their life. Diabetic foot lesions are commonly found in the middle aged group.

Sex Distribution

SEX	NO OF CASES	PERCENTAGE
MALE	44	88
FEMALE	06	12
TOTAL	50	100

In the present study,44(88%) are males and 6(12%) are females. Higher incidence of male diabetic foot lesions is mainly due to the trauma and smoking Grading as per Wagner's classification system

GRADE	NO OF PATIENTS	PERCENTAGE
0	0	0
1	07	14
2	09	18
3	19	38
4	14	28
5	01	2

Modalities Of Treatment

GRADE	NO OF PATIENTS	
I & D	07	14
DEBRIDEMENT	11	22
DEBRIDEMENT+STG	21	42
AMPUTATION	15	30
AMPUTATION + STG	05	10

DURATION OF COMPLAIN

	DEBRIDEMENT	TOE AMPUTATION	MAJOR AMPUTATIONS
< 3 DAYS	11	03	-
3 DAYS TO 1 WEEK	10	06	04
> 1 WEEK	09	-	07

CONCLUSION

- Diabetic foot prevalence is increasing in younger age group , while it is most commonly found in 60- 70 years of age group.
- Approx. half of patients presented with deep seated infections like abscess and localized gangrene.
- 20 out of 50 cases despite of proper medical management and repeated debridement had to undergo local

amputation, BK amputation and AK amputation.

- Toe Amputation were most common which were done for localized gangrene.
- Patients presenting late with deep infections (Grade 3 or 4) had outcome of major amputations.
- Negative pressure wound therapy was given in 10 patients. It resulted in faster rate of healing and increased granulation tissue formation.
- Total contacts casts speeded up the healing process.
- Patients' education about foot infections is very important.
- Once foot infection develops, it has to be treated immediately and radically by repeated debridement.
- It is of utmost importance to first control diabetes with insulin in addition to surgical debridement and antibiotics.
- Negative pressure therapy and newer advances in the conservative surgical management of diabetic foot like enzymatic debridement and bio adhesive dressings helps to preserve the limb.

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