



Management of Diabetic Foot: A Short Term Analysis in a Tertiary Care Hospital

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Abstract

The diabetic foot is mainly due to

- 1. Neuropathy*
- 2. Ischemia*
- 3. Infection*

The study was carried out from 28/07/2014 to 27/07/2015. The new procedure of Irrigation and dressing was done in 80 patients.

Keywords:-*Diabetic foot, irrigation Dressing.*

Introduction

The management of DF is very complex. Life time risk for Diabetic Foot (DF) is about 15%. Major adverse outcome of Diabetic Foot (DF) is amputation. Risk of DF increases 2-4 fold with the duration of diabetics. The risk of amputation in

Lower limbs are about 14 to 40 times higher in diabetics than non diabetics.

After amputation 30% of the patients lose other legs within 3 years. After amputation 2/3 of the patients die within five years.

In our procedure 1.Povidion iodine 2.Normal Saline 3.Metronidazole i.v. solution 4. Hydrogen peroxide solution were used.



Fig. 1 :- hallus valgus deformity



Fig. 2 : gangrene of great toe

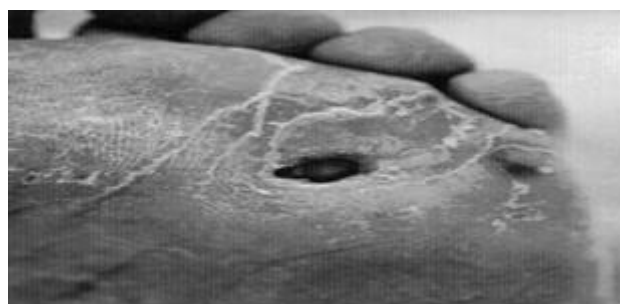


Fig3 :- TrophicUlcer

Pathophysiology: It is most likely a vascular disease. The basic mode is via Neuropathy (sensory, motor & autonomic)

Ulcer classification

•Wagner classification

1. - intact skin (impending ulcer)
2. – superficial

3. – deep to tendon bone or ligament
4. – osteomyelitis
5. – gangrene of toes or forefoot

Diabetic foot should be diagnosed early and managed promptly as the healing is very poor due to various factors like Neuropathy, Ischemia and infection



Fig. 4 :- trophic ulcer in inf. aspect of great toe

Aim of study

1. To diagnose the DF early and to provide appropriate treatment.
2. To revive the DF from pre-gangrenous State using simple and economic method of Dressing.

Material and Methods

This study was carried out in the Department of surgery, R.D. Gardi Medical college, Ujjain from 28-07-2014 to 27-07-2015. A total 80 cases of Diabetic Foots were selected. In my analysis the age distribution shown in Table 1.

Table 1

Age distribution in DF

(Highest incidence in age group 61-70 yrs)

Age (Yrs.)	No. (N=80)	Percentage
41-50	5	6%
51-60	10	10%
61-70	60	75%
71-80	5	6%
81-90	0	0%

Table 2
Shows the male and female ratio in DF
(Highest Incidence in Males)

Sex	No. (N=80)	Percentage	Ratio M:F
Male	60	75	3:1
Female	20	25	

All 80 patients were DM-2 out of these 6% of the patients have family history of D.M.

The Socio-economic status was analyzed in the table (3)

Table – 3
Shows the Social-economic status
(Highest incidence in Low Socioeconomic Status)

Socio-Economic Status	No. of pts. (N=80)	Percentage
Low	75	94%
Medium	5	6%
High	0	0%

As per our Analysis the table (4) shows the Diabetic gangrene (DG) involvement of foot and toes

Table – 4
Diabetic gangrene involvement:
(All toes Involved in 25% cases)

DG	No. of the Patients	Percentage
Rt great toe	10	12%
Lt great toe	10	12%
Lt foot	19	24%
All toes	20	25%
Rt foot	21	26%

All the 80 patients were administered ceftriaxone injection and Metronidazole infusion till culture and sensitivity reports come.

Table – 5
Shows the culture and Bacteria

Bacteria	No. of the Patients	Percentage
Staph. Aureus	61	76%
Other bacteria	19	24%

76% of the patients were having staph. aureus at the ulcer site and 24% of the patients were having other type of bacteria.

Table-6
Type of DM:
(No any case of DM-I detected)

Type of DM	N=80	%
Type –I	0	0
Type- II	80	100

Table-7
Family History:
(Family history present in only 6% cases)

F/H	N=80	%
Present	5	6.25
Absent	75	93.75

Table-8
Skin biopsy:
(12.5 % incidence of fungal growth other than bacteria)

Skin biopsy near wound	N=80	%
Fungus growth	10	12.5
Bacteria	70	87.5

12.5% of the patients were having Fungus growth around the skin of Diabetic ulcer.

8% of the patients were having intermittent claudication. These patients were treated with pentoxifylline tabs.

Method of study
Requirement

1. Polythene bag (size 1.5ft × 1 ft)
2. 5% povidone iodine solution amount 4 liters.
3. Warm normal saline (4liters)
4. Metronidazole i.v. solution (1liter)
5. Hydrogen peroxide (1 liter)
6. Infusion set.
7. Saline bottle
8. Collection bag (uro bag)

Solution A contains povidion iodine (5%) + Normal saline + H₂O₂ (1:1:1)

Solution B contains Metronidazole + Normal Saline (1 : 1)

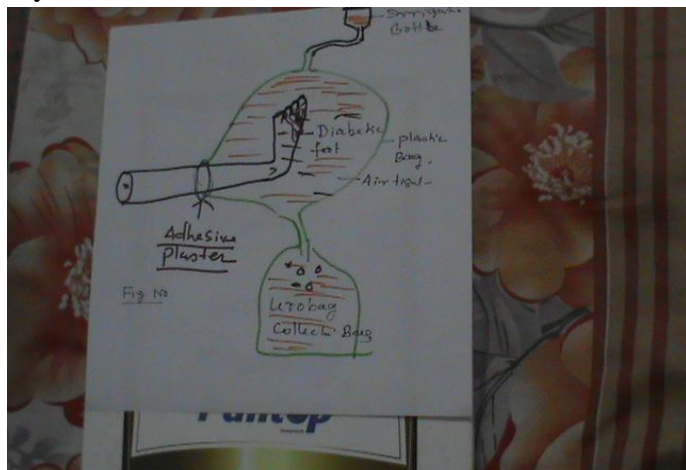
The polythene bag (1.5 ft × 1ft) fix to the foot (Diabetic foot) but it should be air tight.

In our study

Solution A was irrigated for 8 hrs (first)

Solution B irrigated for 2nd 8hrs.

The irrigation procedure should be continued for 7 days.



IRRIGATION DRESSING

Why irrigation is necessary

Due to atherosclerotic changes the minimal amount of antibiotic will reach to the site of diabetic ulcer.

Biopsy of the ulcer site of skin was done for ischemia of skin and sensory fibre status. Then skin grafting was done in diabetic foot.

In our series we did 10 cases submitted for skin grafting ,50 patients required only irrigation dressing and 20 patients needed amputations.



Fig.5 :- irrigation treatment for diabeticfoot

Discussion

In my analysis of 80 patients 75% of the patients were found in the age group of 61-70 yrs, and the incidence of Male patients 75%. 6% of the patients were having family history of DM. 94% of the patients were having poor economic status. And all toes were involved in 25% of the patients. Stap.aureas were found in 76% of the patients of diabetic foot. 12.5% of the patients were fungus growth around the wound of diabetic foot. 8% of the patients were having intermittent claudication. Blood sugar level of patients were having 150-200mgm% 62% of the patient were improving after irrigation Dressing.

25% of the patients needed mid foot amputation. Hiltonet all described the dressing of DF. They used iodine preparation for dressing of DF^[1] Kruse et all described the wound debridment with normal saline and antiseptic irrigation of DF^[2] Gerit Mulder described appropriate and complete wound debridment was an essential part of Diabetic foot ulcer^[4]



Fig 6. :- Appearance of Granulation Tissue



Fig. 8 :- amputation of fingers



Fig9 :- closure after amputation

Summary and Conclusion

In our analysis 40 patients were marked improvement in irrigation dressing .10 patients had undergone skin grafting and iodine sensitivity reaction is not detected in any of patients.

Blood sugar, serum cholesterol and serum creatinine are to be checked every month.

Regular foot examination should be done every month. Foot were should be checked every month.

Diabetic education is to be given to all diabetic patients. Our method of irrigation dressing is very simple and can be done to home also. This method of irrigation dressing is very economic.

References

1. Diabetic foot ulcer- prevention, Diagnosis and classification::David G, Armstrong, D.P.H. and Lawrence A. Am. Family physician 1998 March, 15, 57 (6) 1325-1332
2. Pendsey, S ; Diabetic foot , A clinical atlas, Jay Pee Brothers Medical Publishers 2003.
3. Kelkar, P Diabetic Neuropathy, Sem. Neurology 2006; 25:168-73 (PubMed)
4. Broweringe.K. – Diabetic foot Ulcer, Patho-physiology and treatment of assessment and therapy. Am Fam. Physician 2001; 47 1007-16 (PubMed)
5. Clayton W, Elosy T.A.; A review of pathophysiology classification and

treatment of foot ulcer in Diabetic patient Clinical Diabetes 2009;27;52-8

6. Oybu, so. Jude EB, Tara W neh, N Guyen H.C., HarksL.B.Boulton AJ,- A comparison two diabetic foot ulcer, classification system. The wagner and the University of Texas, Diabetic Care, 2001, 24;84-8 (Pub Med)
7. ArmanZaharil Mat Saadet all. Used various method of Debridement of Diabetic foot in management ISRN Endoeriology Vol. 2013 Article 10 608 313 9 pages.
8. Griffiths GD. Diabetic foot disease . In CuschieriSA , Essential Surgical Practice , 4th edition 2002 Arnold . 785-94
9. Green , Melissa F , Aliabadi , Zarintaj , Green , Bryan T . Diabetic foot : evaluation and management . South Med J 2002;95(1):95-101
10. ZafarA . Management of diabetic foot- two years experience . J Ayub Med Coll Abbottabad 2001;13(1): 14-6
11. Brodsky JW . Staging of foot lesions in diabetic patients . In Levin and O' Neals ; The Diabetic Foot , 6th edition . Mosby Inc . 2001;273-75
12. Andrew JM ,Boulton , Vileikyte L. Diabetic foot problems and their management around the world . In Levin and O'Neals “ The Diabetic Foot” 6th edition , Mosby, Inc. 2001;266