



FACTS AND OBSERVATION OF BELOW KNEE AMPUTATION IN DIABETIC FOOT

General Surgery

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ABSTRACT

Background : Diabetic foot is one of the serious complication of diabetes which is associated with prolonged hospitalization and risk of lower limb amputation. Early treatment of diabetic foot is very important because Patient may end up with amputation of limb and that leads to disability.

AIMS AND OBJECTIVE: To study incidence of below knee amputation in diabetic patient and to identify and quantify risk factor for below knee amputation in diabetic patient with foot infection, to study of various clinical outcome of diabetic foot and management, to study economic impact on hospital and society in terms of hospital stay, antibiotic usage etc.

MATERIAL AND METHOD : as per our study included 25 random cases of below knee amputation and we conducted in retrospective study in diabetic foot patient.

CONCLUSION: below knee amputation in diabetic patient were good because of patient with infected foot had difficulty in locomotion which is corrected by Below knee amputation which provide locomotion by early use of prosthesis and other rehabilitation methods.

KEYWORDS

Diabetic foot and its complications, below knee amputation.

INTRODUCTION

Definition of Diabetic foot : Foot of Diabetic patient That has potential risk for pathological consequences, including infection, Ulceration, and destruction of deep tissue Associated with neurological abnormalities, peripheral arterial diseases, and metabolic complication.

Predisposing factors: vascular disease, neuropathy, liability to infection.

Precipitating factors : physical injury- mechanical trauma and heat, infection, fissure and cracks.

Lower limb amputation is one of the most feared complication of diabetes. The significant risk factor for a patient with diabetes to require an amputation are lower extremity ischemia, neuropathy, a history of foot ulcer, elevated HbA1c and retinopathy and indicators for lower extremity amputations includes septic gangrene, peripheral arterial occlusion, non- healing ulcer, severe soft tissue infection and osteomyelitis.

MATERIAL AND METHOD

The study includes 25 random cases of below knee amputation among cases of lower extremity amputation done in diabetic patient admitted and treated in our hospital done in retrospective manner. All the patients case paper were taken from medical record branch and details about onset, duration, and progression of disease with associated symptoms were taken. Below knee amputation in diabetic gangrene, wound examinations, details and further higher level of amputation like above knee amputation or split skin grafting were required or not was noted, cause of death.

INCLUSION CRITERIA –

- Patient age between 10 to 80 yrs both male and female.
- All diabetic patient having foot lesion.
- Patient requires surgical interference such as incision and drainage, debridement, toe amputation, below knee amputation.
- Patients who were admitted to surgical wards of our hospital, diagnosed to have diabetic foot and manage by different surgical approaches.

EXCLUSION CRITERIA-

- Children less than 10 yr
- Patient having bleeding disorders, malignancy, immunocompromised.

PREOPERATIVE PREPARATION

All patients underwent through clinical examination and a detailed history were asked for. All patients were evaluated for systemic disease and treated for the same then posted for operation. All routine investigation were done.

- **Examination and evaluation of patient:** temperature, pulse, BP, Respiratory rate, weight, pallor, icterus, cyanosis, clubbing, oedema, lymphadenopathy.
- **Investigation:** Hb, total count, Fbs, pp2bs, s. creatinine, s. albumin, urine sugar, urine ketone, urine albumin and **radiological investigation:** x-ray local, x Ray chest, x Ray abdomen, usg. And **arterial colour Doppler and pus culture sensitivity.**
- **Treatment option-** type of amputation (emergency/elective), Healing occurs primarily or after refashioning, proximal amputation, split skin grafting.

BELOW KNEE AMPUTATION

- **Indication :** Below knee amputation should be preferred to syme's amputation in diabetic patient who is having for foot infection which spread to involve the plantar skin.
- **Contraindication:** 1.any patient who is having contracture of 15 degree or more at knee joint should not go for below knee amputation because prosthetic fit is impossible 2.Bed ridden patient as healing is in doubt in these patient 3.proximal rubor cellulites ischemia.
- **Surgical technique:** design of the skin flaps for the below knee amputation depends on the distribution of gangrenous or infected tissues the presence of surgical scar, and documented islands of ischemia. three basic skin flap designs are utilized in the vast majority of below knee amputation.
- equal length anterior and posterior flap.
- creation of long posterior myo-cutaneous flap based on underlying gastrocnemius and soleus muscle.
- creation of equal length medial and lateral flap via sagittal incision.

Principles of amputation surgery:

- Exploration and excision must be thorough but gentle.
- Tourniquet is avoided.
- Infected area must be explored widely.
- Primary closure of wound should be avoided if any doubt regarding liability of tissue.
- Stump must be closed after putting drain.
- Aim should be to preserve foot as far as possible.
- Protect the other foot at all times.

POST-OPERATIVE PHASE:

- In the post-operative period, orally started after six hours. Post op air splint has been used to decreased wound edema, decreased pain earlier mobilization and improved primary healing. foley's catheter was removed as per patients compliance. Suction drain was removed once the output falls to 25-30cc. injectable antibiotics were continued for 14 days. Post-operative deep breathing exercises, diabetic control, early limited ambulation was done. Post op infections have been observed and graded, pus culture and sensitivity taken.

**Below knee amputation incision****Below knee amputation stump****OBSERVATION:****Table - 1 Incidence Rate**

	Total No. of patients (n=25)
Amputation done	16
Treated conservatively	09

Table - 2 Age Distribution

Age in years	No. of patients (n=25)
31-40	1
41-50	5

51-60	6
61-70	9
71-80	2

Table - 3 Sex Distribution

Sex	No. of patients (n=25)
Male	14
Female	11

Table - 4 Socio-economic Class

Class	No. of patients (n=25)
Lower	16
Middle	9

Table - 5 Comorbid Conditions

Comorbidity	No. of patients (n=25)
Hypertension only	6
Hyperlipidemia only	2
IHD only	1
Hypertension + Hyperlipidemia	3
Hypertension + IHD	1
Hyperlipidemia + IHD	4
Hypertension + Hyperlipidemia + IHD	3

Table - 6 Risk Factors

Smoking	No. of patients (n=25)
Yes	11
No	14

Table - 7 Clinical Feature At Time Of Presentation

Clinical features	No. of patients (n=25)
Infected / Non healing ulcer only	9
Gangrene only	1
Infected / non healing ulcer + cellulitis	6
Infected / Non healing ulcer + gangrene	2
Cellulitis + gangrene	4
Infected / non healing ulcer + cellulitis + gangrene	3

Table - 8 Preoperative Hospital Stay

Days	No. of patients (n=25)
1-7	11
8-14	5
15-21	2
22-28	1
29-35	4
36-42	2

Table - 9 Duration Between Onset Of Diabetes Mellitus And Amputation

Duration in years	No. of patients (n=25)
1-10 years	13
11-20 years	7
21-30 years	3
31-40 years	2

Table - 10 Previous Amputation In Diabetic Patients

Amputation	Toes	Transmetatarsal	No. of patients (n=12)
Ipsilateral	9	1	10
Contralateral	1	1	2

Table - 11 Elective / Emergency Amputation

Type of amputation	No. of patients (n=25)
Emergency	11
Elective	14

Table - 12 Post Operative Infection

Organism	Total No. of patients (n=25)
Present	11
Absent	14
Organism	Total No. of patients (n=11)
E. Coli	2
Klebsiella	2
Pseudomonas	3
Proteus	4

Table – 13 Final Outcome

Final Outcome	No. of patients (n=25)
Transtibial amputation with primary healing	13
Transtibial amputation healing after refashioning	7
Transtibial amputation healing	0

Table - 14 Duration Of Hospital Stay (in Days)

Days	Total No. of patients (n=25)
1-10	1
11-20	3
21-30	3
31-40	3
41-50	2
51-60	6
61-70	2
71-80	1
81-90	1
91-100	1
>100	2

RESULTS:

In this retrospective study, all 25 diabetic patients (who underwent BK amputation) were admitted in our hospital, in General surgery department.

FACTS from this study:

- Below knee amputation most commonly performed in 51-70 yrs age groups. Outcome was poor in old age group.
- Below knee amputation most performed in male patients as they more vulnerable to trauma as working outside.
- majority of our patients from lower socioeconomic class due to lack of awareness or ignorance.
- patients came with gangrene, swelling, foul smelling pus discharge, after amputation, healing was poor and require re-amputation at higher level or develops septicemia.
- most patients had risk factor like smoking and other comorbid condition like hypertension, retinopathy, nephropathy, IHD. It leads to poor blood supply, delay in healing of stump.
- longer diabetic history, poor glycemic control leads to increase chance of infection, peripheral neuropathy, micro-angiopathy, retinopathy these all leads to poor healing rate.
- patients who were operated for below knee amputation came with infected foot and some requires re-operation or expired.
- patients who had severe anemia, septicemia, poor glycemic control, altered renal functions, hypo-proteinemia, ketosis leads to poor healing after amputation.
- overall this study helped us to analyse end output below knee amputation in diabetic foot patients.

CONCLUSION

- Below knee amputation outcome in diabetes patient were good because of patients with infected foot had difficulty in locomotion which is corrected proper timely interval by below knee amputation which provide proper locomotive early use of prosthesis.
- Awareness of patient, education about diabetes mellitus and diabetic foot, early presentation, early diagnosis and it's management, correction of anemia and septicemia, selection of antibiotics, revascularization might be beneficial in limb salvage.
- Longer hospital stay in patients with diabetic foot amputation, increase the psychological burden and ecological influence in patient by undergoing depression which is more common due to long time dressing and does not take proper meal due to lack of interest leads to bad control blood sugar level finally leading to re-amputation at higher level and increase mortality due to septicemia by fulminant infection, metabolic complication of diabetes or some other cardiopulmonary cause. It can be control by timely intervention which can be attained by creating awareness among the public by implementing Non-communicable disease programmes of government and rehabilitation in form of crutches and artificial limb.

REFERENCES

1. Marvin E. Levin, the diabetic foot
2. Jain AKC, Vishwanath S. Distribution and analysis of diabetic foot
3. Major lower extremity amputation in diabetics kharton coaching hospital and gabir abu El izz center by Dr Mohammad osman suleima

4. Dr. T.N Patel. A system E of surgical diagnosis
5. Hamilton bailys : demonstration of physical signs in clinical surgery