DIABETIC FOOT

Prof L.M.NTLHE

INTRODUCTION

DEFINITION – DIABETIC FOOT PATHOLOGY

- NEUROPATHY
- MICRO-ANGIOPATHY *(&MACROANGIOPATHY*)
- SEPSIS :- SUPERFICIAL
  :- DEEP
  :- OSTEOMYLITIS/JOINT SEPSIS

DM INCIDENCE :

USA - 16 MILLION (6% POPULATION)

UK - 1,2 MILLION (2% POPULATION)

RSA - ? 5 to 8 million currently

SWEDEN - 3,6% ANUALLY

NETHERLANDS - 2,1% ANUALLY

MORBIDITY

- ULCER INCIDENCE …15%
- ULCER *PRECEEDS AMPUTATION* in 85% CASES (36% amputees dead in 5years)
- USA : 82,OOO AMPUTATIONS PER ANNUM
- TANZANIA : AMPUTATION MORTALITY 54% PER 2 YEARS…….?ACCESS

COST

$ 28,000 TO HEAL AN ULCER PER FOOT IN 2yrs

$ 20,000 –$ 60,000 FOR AMPUTATION PER PATIENT

Ψ, EMOTIONAL, SOCIAL COSTS – UNMEASURABLE

$ 132 BILLION OVERALL DM *COSTS*

$ 92 BILLION DM *MEDICAL* EXPENDITURE

1) MICROANGIOPATHY

- **STRUCTURA**L CHANGES - BM THICKENING
  - CAPILLARY FRAGILITY
  - ENDOTHELIAL ABNORMALITY
- **FUNCTIONAL** CHANGES - VASOMOTOR DEFECT
  VASOCONTRICTOR LOSS &
  AV SHUNTING

  - HYPERAEMIC RESPONSE defective

  - PERMIABILITY DEFECT
- *RESULT: ↓ O_2, ↓ NUTRIENTS →* ***ULCERATION & POOR HEALING***

2) SEPSIS

PATHOPHYSIOLOGY:

- **DEFECTIVE NEUTROPHILS** (LAZY LEUCOCYTE SYNDROME)

- ↓CHEMOTAXIS
- ↓PHAGOCYTOSIS
  - RESPIRATORY BURST & SUPEROXIDE PRODUCTION & BUG KILL
  - ↑ INTERSTITIAL GLUCOSE / ↓ INTRACELLULAR GLUCOSE
  - TISSUE HYPOPERFUSION

Sorbitol metab / Myoinositol lack /

MICROBIOLOGY – *POLYMICROBIAL* : G(+), G(-), AEROBIC, ANAEROBIC

- INFECTION - > 100,000 ORGANISMS/g OF TISSUE
- BIOPSY/CURRETAGE/PUS SWAB

3) NEUROPATHY

INCIDENCE :30% - 50%

BILATERAL : 30%

- *SENSORY*
- *MOTOR*
- *AUTONOMIC* 1) ↓ SUDO MOTOR

  2) ↓ HYPERAEMIC RESPONSE

  3) AV SHUNTING

CLINICAL FEATURES/ CLASSIFICATIONS

- MAY BE ABSENT (Normal Foot)
- CLASSICAL INFLAMMATION – PAIN, ERYTHEMA, OEDEMA, HYPERAEMIA
- HAMMER TOES,FOOT ARCHES↓,CHARCOT Joint
- PURULENT DISCHARGE/ NECROSIS
- SYSTEMIC SEPSIS……May kill the patient

CLASSIFICATIONS (MANY)

- PROGNOSTICATION
- SELECT INTERVENTION OPTIONS
- TWO INTERNATIONAL GROUPS *CURRENTLY* DEVELOPING A STANDARD COMPREHENSIVE CLASSIFICATION

RADIOLOGICAL CASSIFICATION OF DM NEUROARTHROPATHY

(*EICHENHOLTZ* – 1966)

STAGE 0 AT RISK
1 DEVELOPMENT
2 COALESCENCE
3 RECONSTRUCTION + RECONSTITUTION

ANATOMICAL CLASSIFICATION (*BRODZKY*)

TYPE 1 MIDFOOT (50-60%) – STABLE
2 HINDFOOT (20-25%) – UNSTABLE
3 ANKLE - 3a SEVERE INSTABILITY
- 3b PES PLANUS & ACHILLES TENDON INSTABILITY

UNIVERSITY OF TEXAS CLASSIFICATION (HARKNESS et al)

INCLUDES *Depth + Ischaemia + Infection*

DIABETIC FOOTCLASSIFICATION (WAGNER)

O ….NO VISIBLE LESION but foot at RISK

I ….SUPERFICIAL ULCER

II ….DEEP ULCER BASED ON Tendon/Bone

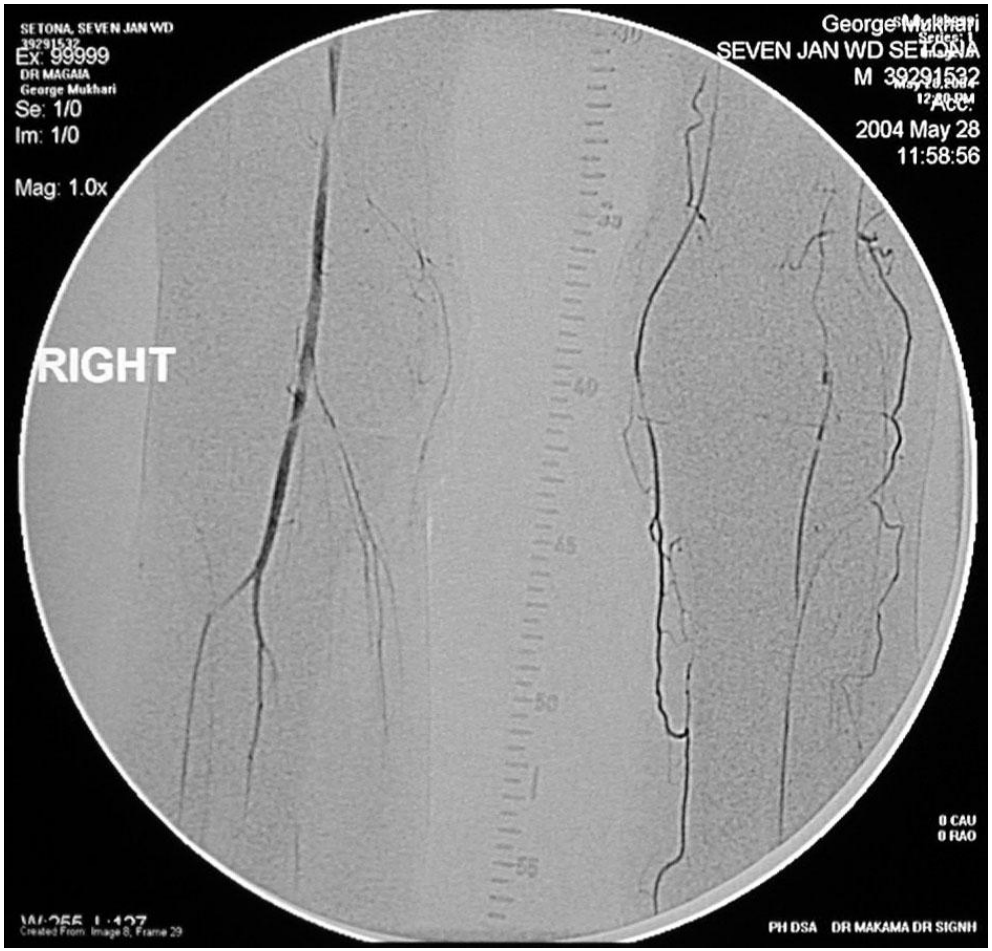
III….ABSCESS /SINUS /OSTEITIS

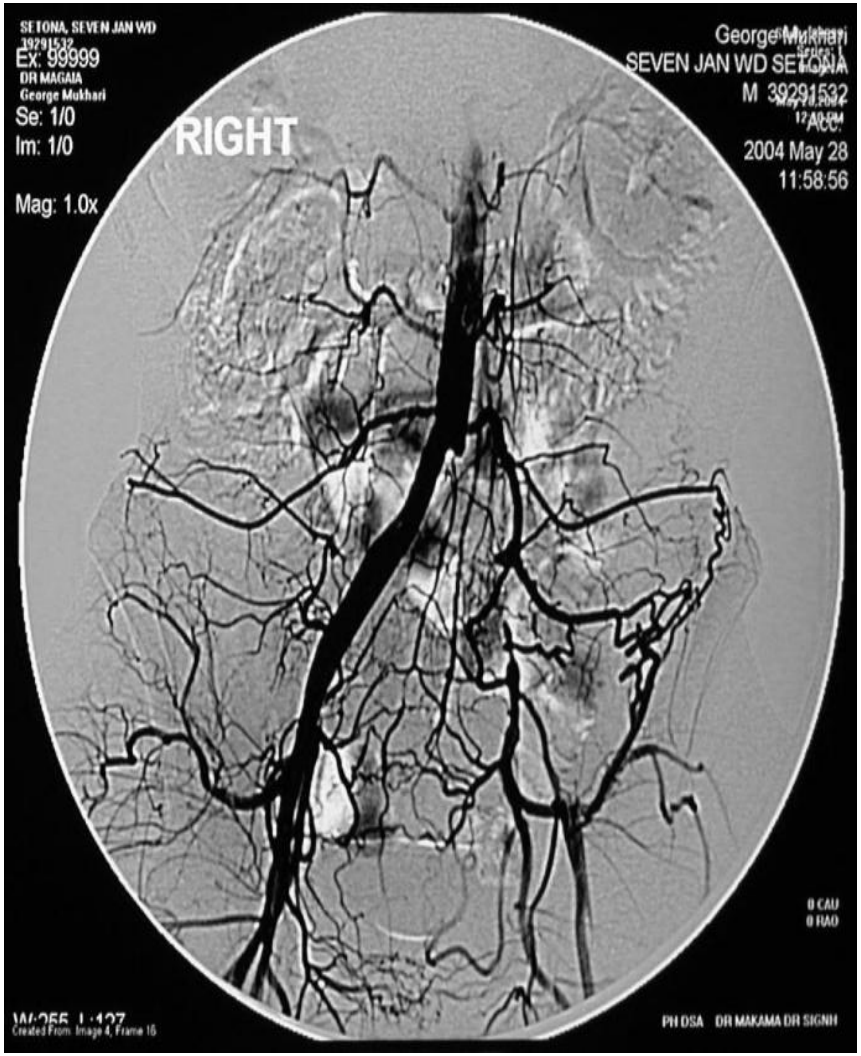
IV….GANGRENE OF TOES /FOREFOOT

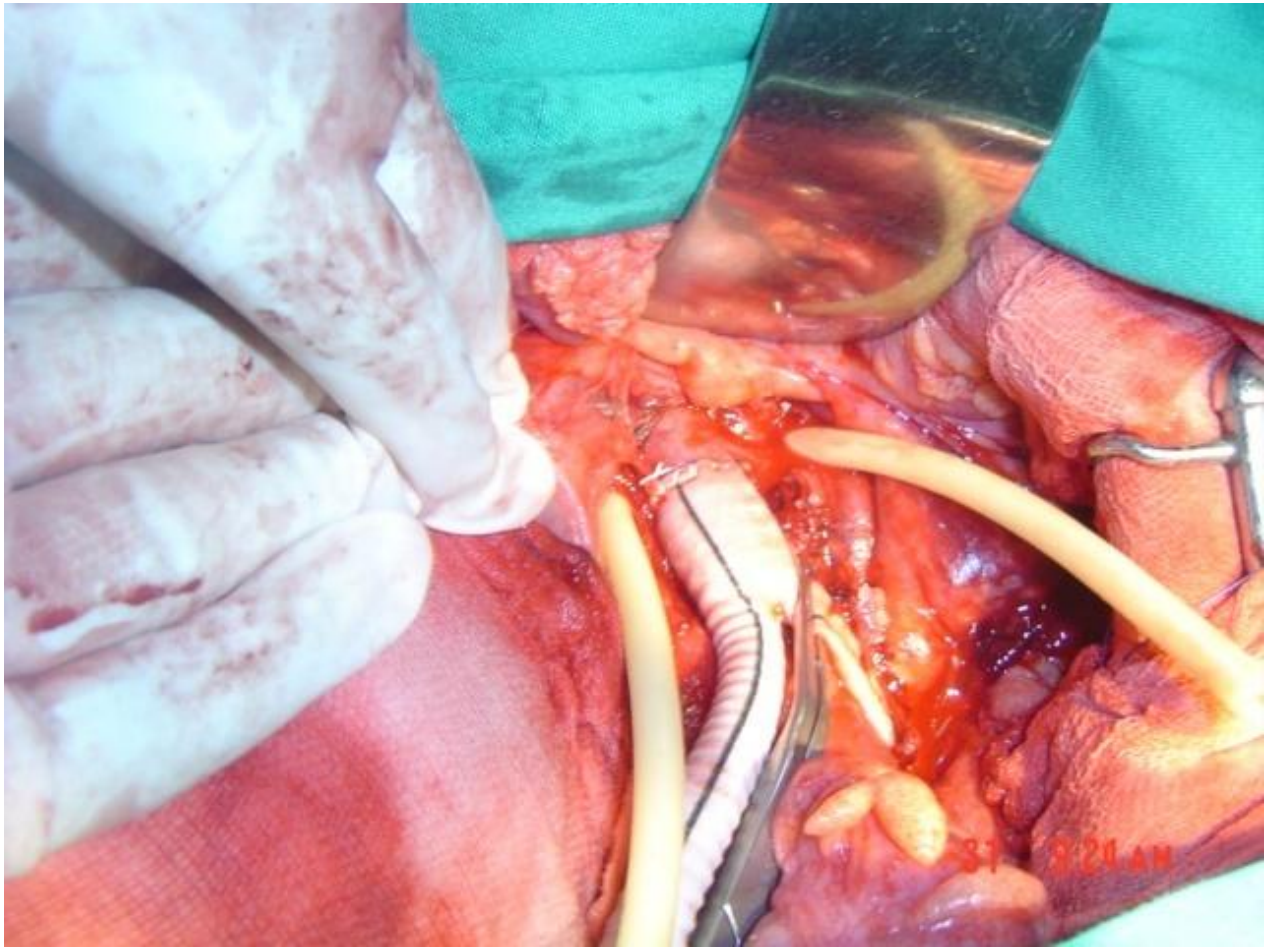
V ….GANGRENE OF WHOLE FOOT

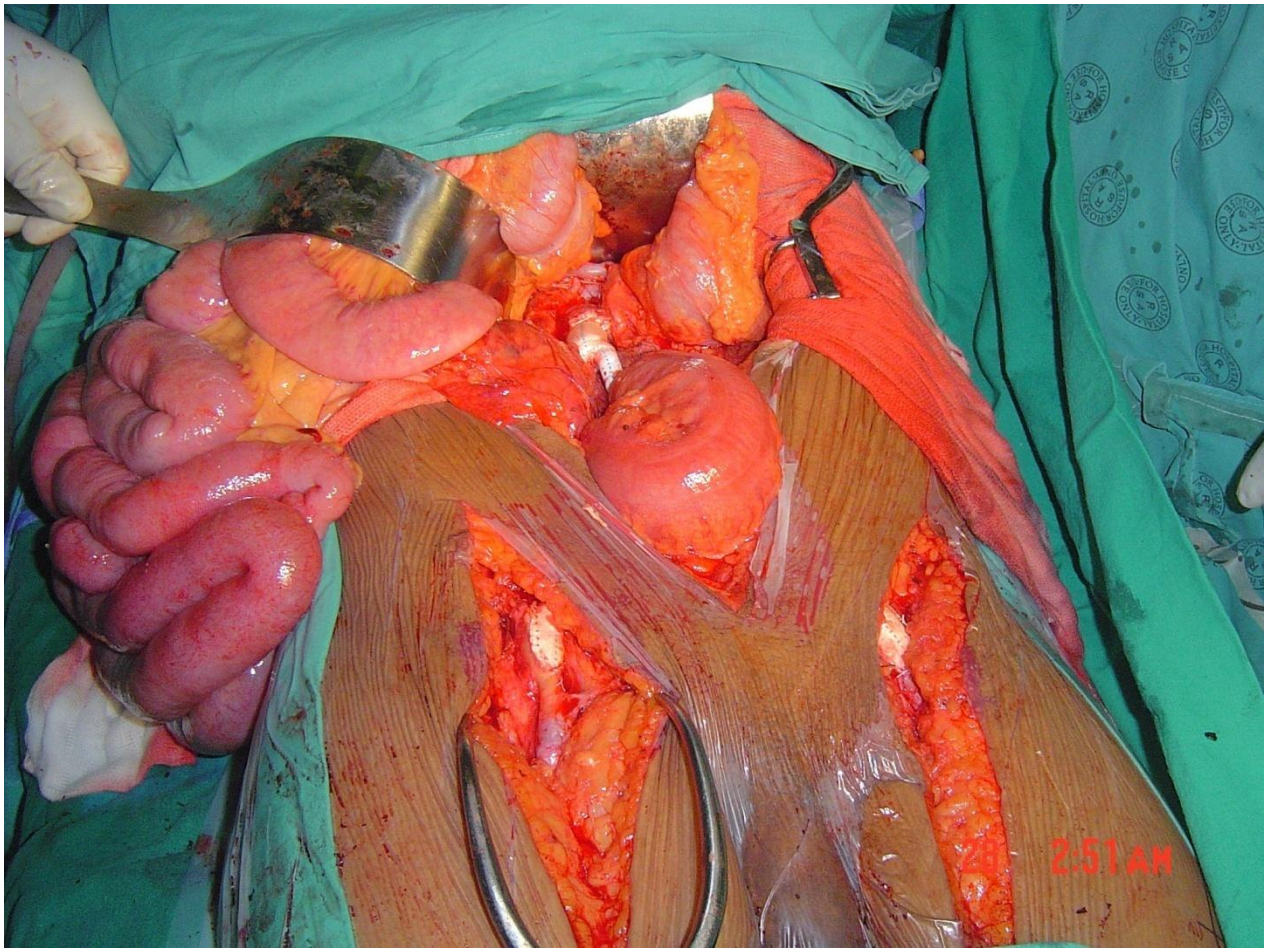
Fig. 25.7 Neuropathic ulceration of the first metatarsal head with sinus entering joint space.

GE MUKHARI
PITAL
5 8:49 PM


SETONA, SEVEN JAN WD
39291532
Ex: 99999
DR MAGAIA
George Mukhari
Se: 1/0
Im: 1/0
Mag: 1.0x
RIGHT
George Mukhari
SEVEN JAN WD SETONA
M 39291532
ACC:
2004 May 28
11:58:56
0 CAU
0 RAO
Created From: Image 8, Frame 29
PH DSA DR MAKAMA DR SIGNH


SETONA, SEVEN JAN WD
39291532
Ex: 99999
DR MAGAIA
George Mukhari
Se: 1/0
Im: 1/0
Mag: 1.0x
RIGHT
George Mukhari
SEVEN JAN WD SETONA
M 39291532
2004 May 28
11:58:56
0 CAU
0 RAO
Created From: Image 4, Frame 16
PH DSA DR MAKAMA DR SIGNH




2:51 AM

DEBRIDEMENT :

- HAMMER TOE

30 3:14 AM

MANAGEMENT :

- PROTOCOLS – PREVENTION & TREATMENT
- TEAM APPROACH
- LONG TERM/LIFE LONG TREATMENT
- WOUND CARE CENTERS/INSTITUTIONS

INVESTIGATIONS:-

- *BLOODS* – B/S, U & E, FBC, LIPIDS, LFTs
- *RADIOLOGY* – FOOT XRAY,CXR,ECG
- *DOPPLER STUDIES* – DUPLEX DOPPLER
- *ANGIOGRAPHY/MRI*
- *INDIUM LABELLED LEUCOCYTES* – OSTEOMYLITIS
- WOUND *PROBING…* DOWN TO BONE – BEST SIMPLE TEST

TREATMENT:-

- TIGHT DM CONTROL /DIABETOLOGIST/LIFE STYLE
- DEBRIDEMENT, APPROPRIATE ANTIBIOTICS
- WOUND DRESSINGS
- GROWTH FACTORS
- OFF LOADING – PODIATRY +/- Tcontact Casts /Orthotics
- HYPERBARIC OXYGEN THERAPY
- VASCULAR RECONSTRUCTION / PTA + STENTING
- ORTHOPAEDIC RECONSTRUCTIONS
- PLASTIC & RECONSTRUCTIVE SURGERY
- REHABILITATION – PHYSIOTHERAPY, OCCUPATIONAL THERAPY
- LIFE LONG FOLLOW-UP & TEAM APPROACH