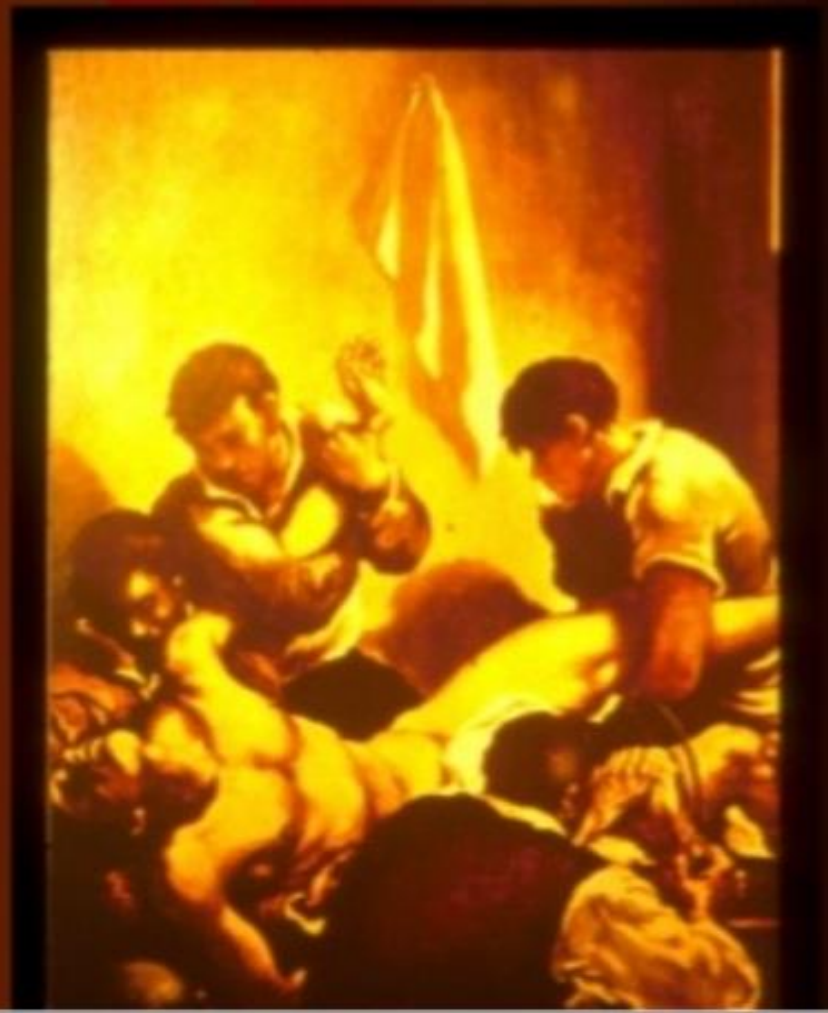
# SURGICAL TREATMENT OF DIABETIC FOOT

# MANAGEMENT OF DIABETIC FOOT

DIABETIC FOOT

TREATMENT IN 19TH CENTURY



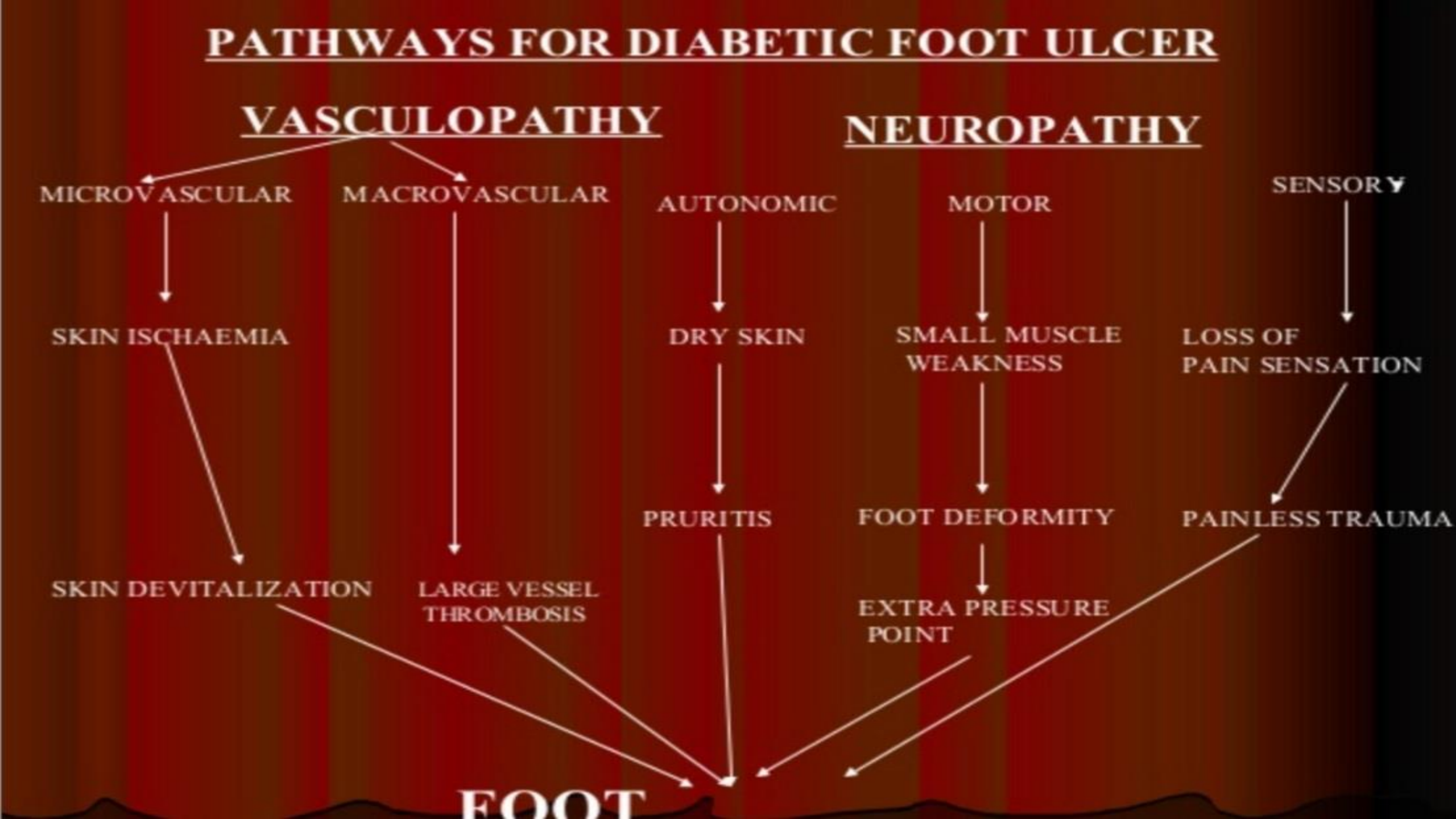
# WHY DO DIABETES PATIENTS GET FOOT PROBLEMS?

REASONS:

NEUROPATHY

VASCULOPATHY

INJURY


PATHWAYS FOR DIABETIC FOOT ULCER
VASCULOPATHY
NEUROPATHY
MICROVASCULAR
MACROVASCULAR
AUTONOMIC
MOTOR
SENSORY
SKIN ISCHAEMIA
DRY SKIN
SMALL MUSCLE WEAKNESS
LOSS OF PAIN SENSATION
PRURITIS
FOOT DEFORMITY
PAINLESS TRAUMA
SKIN DEVITALIZATION
LARGE VESSEL THROMBOSIS
EXTRA PRESSURE POINT
FOOT

# WHY DIABETIC FOOT LESIONS ARE MANY A TIMES MISSED?

- USUAL SIGNS AND SYMPTOMS OF INFECTION ARE ABSENT
- PATIENT DOES NON COMPLAIN OF PAIN
- LOW LEVEL OF AWARENESS AT PRIMARY HEALTHCARE LEVEL
- DIABETIC FOOT LESIONS ARE SILENT

# HIGH INDEX OF SUSPICION

# DIABETIC FOOT LESIONS ARE LIKE

# ICEBERG

## ONLY SMALL PART IS VISIBLE

# SURFICAL TREATMENT OF DIABETIC FOOT

CENTRAL PLANTAR SPACE ABCESS

# SURGICAL TREATMENT OF DIABETIC FOOT

CENTRAL
PLANTAR
SPACE
ABCESS AFTER
TOTAL
DEROOFING

***ICEBERG PHENOMENON***

# SURGICAL TREATMENT OF DIABETIC FOOT

CENTRAL PLANTAR SPACE ABCESS

PRE OPERATIVE

# SURGICAL TREATMENT OF DIABETIC FOOT

CENTRAL
PLANTAR
SPACE
ABCESS AFTER
TOTAL
DEROOFING
*ICE BERG*
*PHENOMENON*

# TYPES OF INJURIES IN DIABETIC FOOT

- SHOE BITE
- HOME SURGERY
- INSECT/RAT BITE
- THERMAL INJURY
- FOREIGN BODY INJURY
- VIGOROUS MASSAGE
- CHEMICAL INJURY

# DIABETIC FOOT INJURIES

## HOME SURGERY

# DIABETIC FOOT INJURIES

## THERMAL INJURY

# DIABETIC FOOT INJURIES

## THERMAL INJURY

# DIABETIC FOOT INJURIES

## CHEMICAL INJURY

# DIABETIC FOOT INJURIES

GANGRENE FOLLOWING VIGOROUS MASSAGE

# DIABETIC FOOT INJURIES

## SHOE BITE

# WHY FOOT NEEDS TO BE SAVED IN DIABETES?

- BK AMPUTATION REQUIRES 40% MORE KCAL/MIN
- NET OXYGEN CONSUMPTION INCREASES
- NEEDS 5 -10 % EXTRA CARDIAC RESERVE
- 85% MORTALITY AT THE END OF 5 YEARS

# *HOW EARLY CON.AMPT. SHOULD BE DONE?*

- AS SOON AS PT.IS HAEMODYNAMICALLY STABLE
- WITHIN 18-24 HOURS
- REGIONAL/LOCAL ANASTHESIA
- SEPTECEMIA CAN NOT BE CONTROLLED WITHOUT EARLY SURGERY

# *GUIDELINES FOR EARLY CON.AMPUTATION*

- INDOOR CARE
- IMMEDIATE HAEMODYNAMIC CONTROL
- EARLY SURGERY UNDER REGIONAL/LOCALANASTHESIA
- PRE OP PARENTERAL ANTIBIOTICS
- PRE OP CREPE/COMP.BANDAGE

# *GUIDELINES FOR EARLY CON.AMPUTATION*

- TOTAL DEROOFING OF AFFECTED PLANTAR SPACE
- EXCISION OF ALL DEVITALISED TISSUE AT THE FIRST ATTEMPT
- EXCISION OF AFFECTED TENDONS TO ITS PROXIMAL EXTENT
- POST OP POST.PLANTAR SLAB

# *GUIDELINES FOR EARLY CON.AMPUTATION*

- **STRICT OFF LOADING OF THE AFFECTED FOOT**
- **DRESSINGS WITH AGENTS WHICH PROMOTE MOIST WOUND ENVIRONMENT**
- **ORAL ANTIBIOTICS FOR 8-10 WEEKS**
- **RECONSTRUCTION/SSG**

# *GUIDELINES FOR EARLY CON.AMPUTATION*

- **FOOTWEAR PLANNING**
- **FOOT EXCERCISES**
- **SCAR STRETCHING & MANIPULATION**
- **GRADUAL MOBALISATION**
- **PATIENT EDUCATION FOR PREVENTION OF FURTHER INJURY**

# LOCAL/REGIONAL ANASTHESIA FOR DIABETIC FOOT SURGERY

## Why regional anaesthesia ?

1] Ideal for day-care patients
2] Safety in high risk patients
3] No intra-op regurgitation & aspiration
4] No PONV
5] Minimal alteration in drug schedule
-specially in diabetics
6) No change in diet schedule

# Why regional anaesthesia ? *Continued....*

6] Minimal effects on vital parameters
7] Safer in emergency situations
8] Can be repeated frequently
9] Conscious & arousable patient
at the end of the surgery
10] Reduction in morbidity & mortality

# Why not other modes of Anesthesia ??

General Anesthesia: [besides usual precautions]

a] Risk of Aspiration and PONV

b] Difficult intubations

c] Resistant hypotension which may last for longer time

d] Management of ischaemic changes and arrhythmias

e] Management of blood sugar

Why not other modes of Anesthesia ??

**Spinal & Epidural Anesthesia**

a] Prevention and management of hypotension

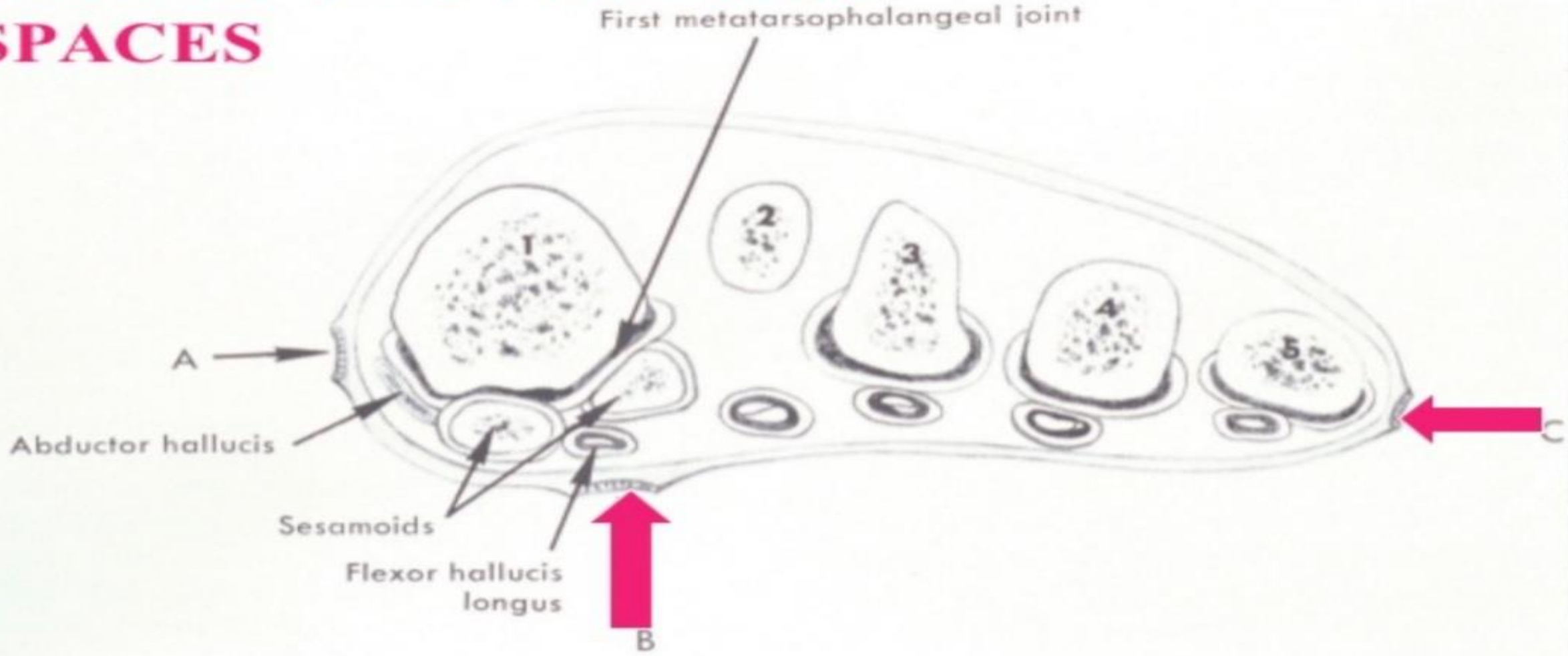
b] Cannot be repeated frequently
[ except in continuous epidural analgesia ]
especially for small but painful procedures.

## Limitations

1] Surgical time limit is between 1-3 hrs.
2] Patient's co-operation is must
3] Failure or partially acted block

# CONCEPT OF PLANTAR SPACES

# CONCEPT OF PLANTAR SPACES



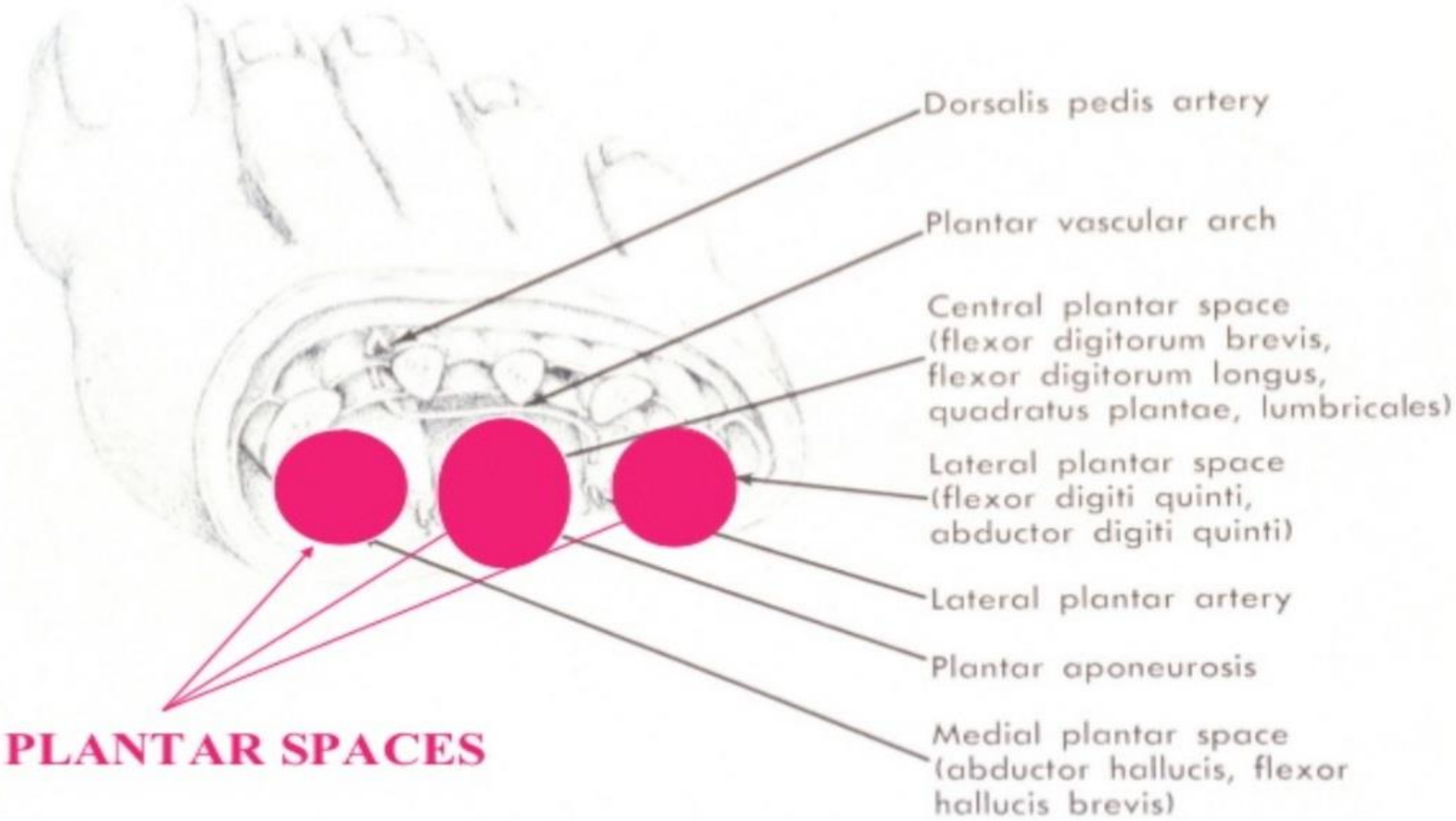



Figure 23–10 ■ Plantar spaces in distal foot.

# ASSESSMENT OF VASCULAR STATUS IN DIABETIC FOOT

- A/B INDEX
- SEGMENTAL PRESSURE MEASUREMENT
- COLOUR DOPPLER
- DUPLEX SCAN
- ANGIOGRAPHY

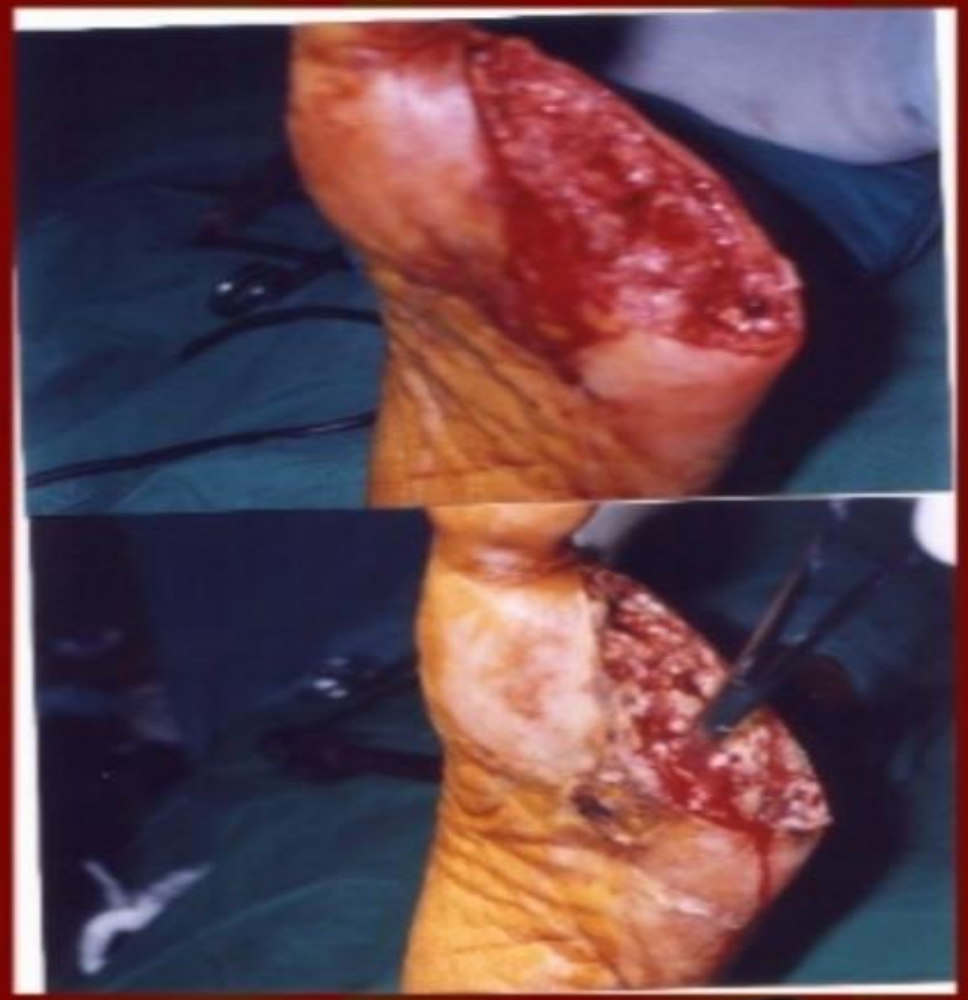
# DEBRIDEMENT IN DIABETIC FOOT WITH VASCULOPATHY

- PRE OP VASCULAR ASSESSMENT MANDATORY
- LOCAL DEBRIDEMENT BEFORE REVASCULARIZATION IF WOUND IS INFECTED
- TOTAL DEBRIDEMENT AFTER REVASCULARIZATION TO REDUCE/REMOVE NECROTIC LOAD
- TOTAL OFF LOADING TILL WOUND HEALS

# DEBRIDEMENT IN DIABETIC FOOT WITH VASCULOPATHY

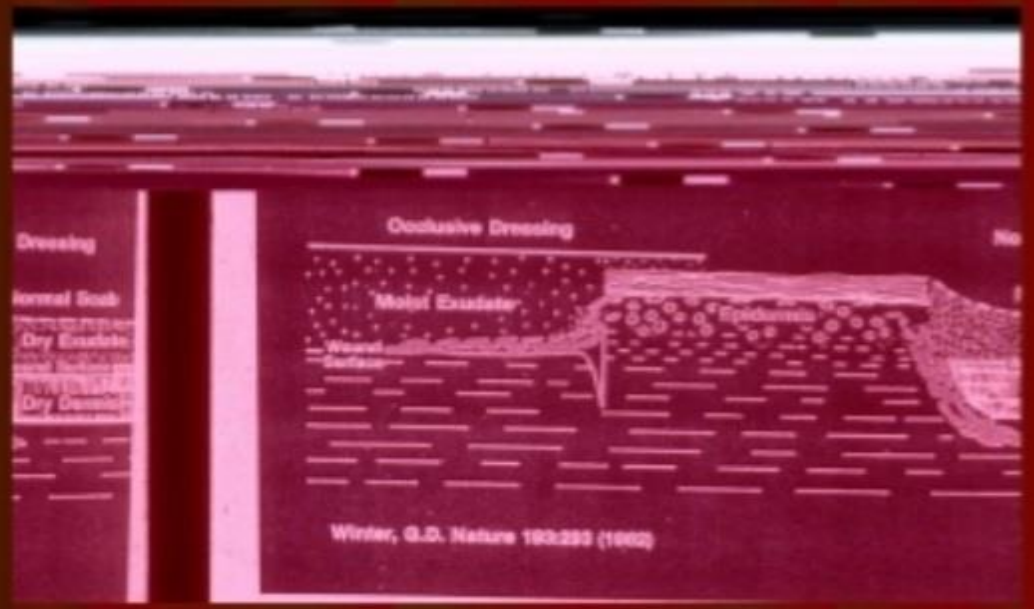
DIABETIC FOOT GANGREME WITH VASCULOPATHY

# DEBRIDEMENT IN DIABETIC FOOT WITH VASCULOPATHY



POST OP
RECURRENT
TENOSYNOVITIS

# WOUND HEALING IN DIABETES




## ADVANTAGES OF MOIST WOUND ENVIRONMENT

# *PRINCIPLES OF DRESSING IN DIABETIC FOOT WOUNDS*

- MAINTAIN MOIST ENVIRONMENT
- NON ADEHERENT
- ABSORBABLE
- EASY TO USE MATERIAL
- COST EFFECTIVE
- PROMOTES HEALING
- REDUCES COLONISATION OF BACT.

# CAUSES OF DELAYED/NON HEALING IN DIABETIC FOOT

## PRIMARY CAUSES

- INADEQUATE OFF LOADING
- INCORRECT VASCULAR ASSESSMENT
- INADEQUATE PRELIMINARY DEBRIDEMENT

# CAUSES OF DELAYED/NON HEALING IN DIABETIC FOOT

## PRIMARY CAUSES

- INADEQUATE OFF LOADING
- INCORRECT VASCULAR ASSESSMENT
- INADEQUATE PRELIMINARY DEBRIDEMENT

# CAUSES OF DELAYED/NON HEALING IN DIABETIC FOOT

## SECONDARY CAUSES

- INADEQUATE ANTIBIOTIC THERAPY
- NEPHROPATHY
- DRUGS
- ASSOCIATED TUBERCULOSIS
- INCORRECT METHOD OF DRESSING

# AGENTS THAT DELAY WOUND HEALING IN DIABETES

- CORTICOSTEROIDS
- NITROFURANTOIN
- LIQUID DETERGENTS
- NEOMYCIN SULPHATE

# AGENTS THAT DELAY WOUND HEALING IN DIABETES

- CHLORHEXIDINE 2%
- POVIDONE IODINE 10%
- EUSOL SOLUTION
- HYDROGEN PEROXIDE

# IDEAL METHOD OF DRESSING IN DIABETIC FOOT

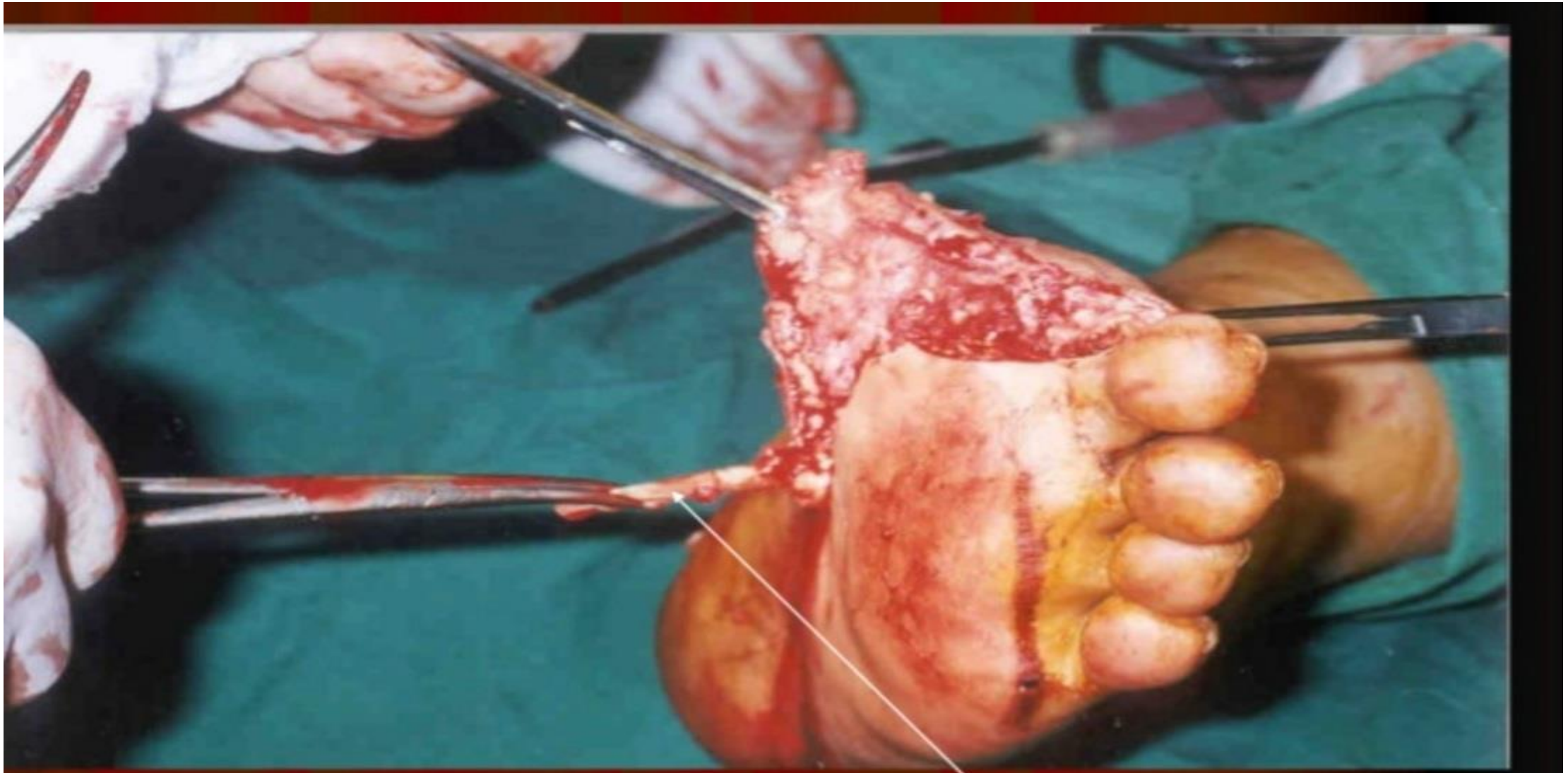
- IRRIGATE WITH STERILE SALINE
- IMMEDIATE POST OP USE PARAFFIN GAUZE
- FREQUENCY OF DRESSINGS DEPEMDS UPON AMOUNT OF EXUDATE
- USE ANTI BACTERIAL OINT. TO REDUCE COLONIZATION
- USEAFFIRDABLE, ACCESIBLE MATERIAL TO MAINTAIN MOIST WOUND ENVIRONMENT

DIABETIC FOOT WOUNDS NEED TO BE *IRRIGATED* AND NOT *CLEANED*

# DOMICIALLARY WOUND CARE SERVICES

# ANTIBIOTIC THERAPY IN DIABETIC FOOT

- NEEDED FOR PROLONGED DURATION
- COST OF THE ANTIBIOTICS IS IMPORTANT FACTOR
- ANEROBIC CULTURE
- DEERPER TISSUE CULTURES
- ANTIBIOTICS PROTOCOL FOR INSTITUTIONS



MEDIAL ASPECT OF FOOT DEROOFED,

WIDELY DRAINED & EXICISION OF FLEXOR HALLLUSIS LONGUS

# DEBRIDEMENT IN DIABETIC FOOT WITH VASCULOPATHY

- PRE OP VASCULAR ASSESSMENT MANDATORY
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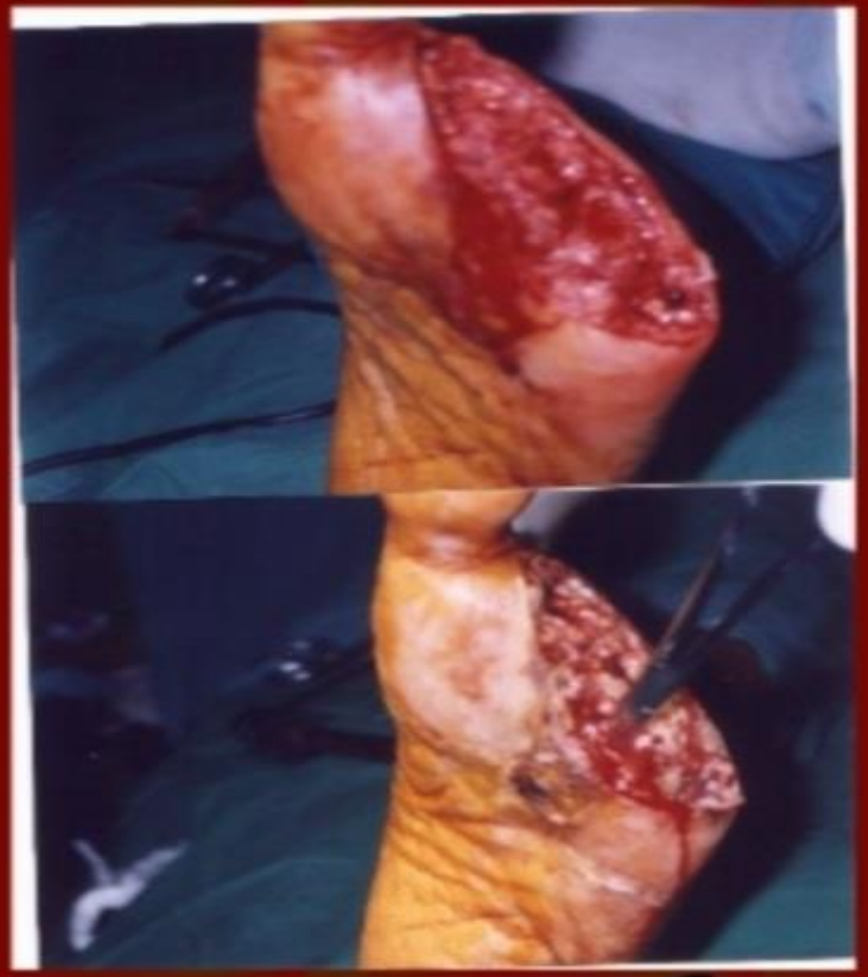
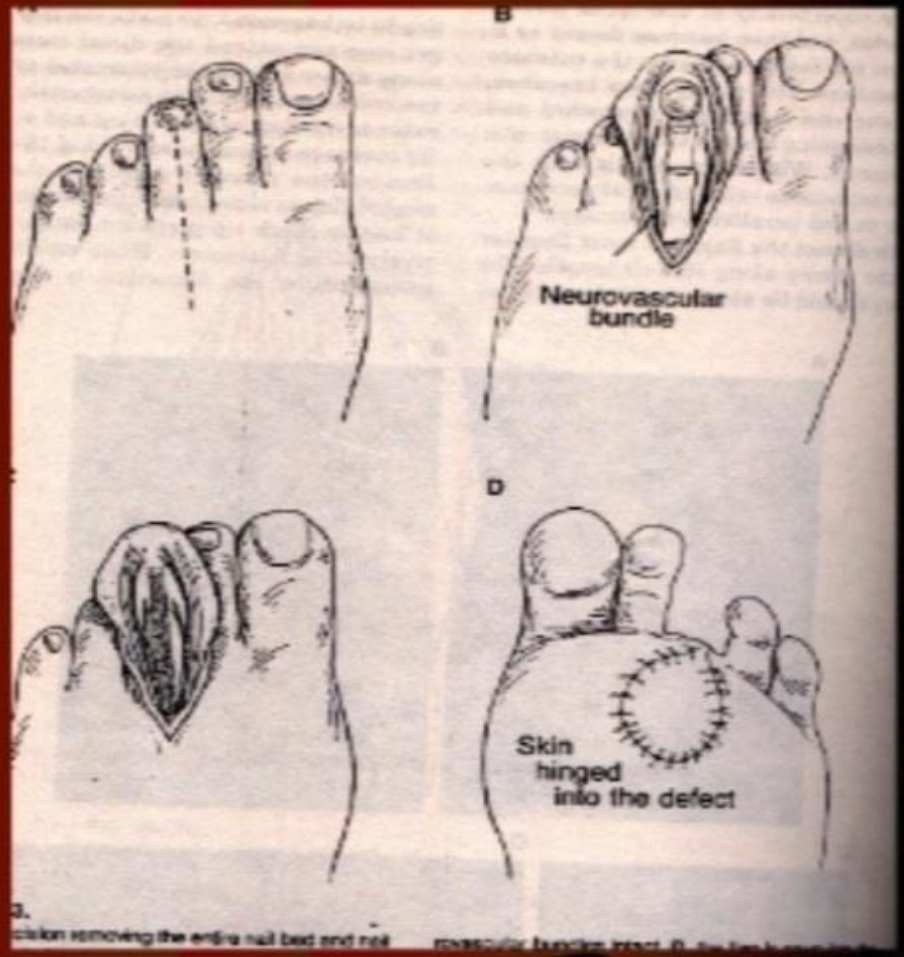


POST OP
RECURRENT
TENOSYNOVITIS

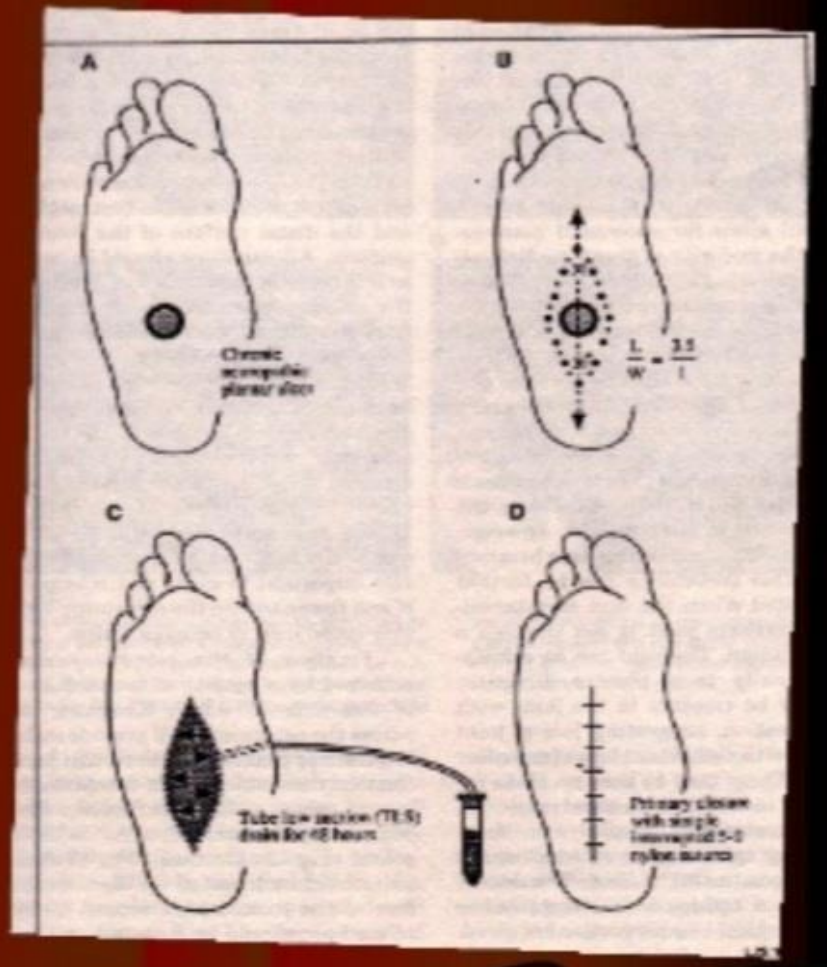
# SURGICAL TREATMENT OF DIABETIC FOOT

RECONSTRUCTION OF FORE FOOT ULCER WITH NEUROVASCULAR FLAP



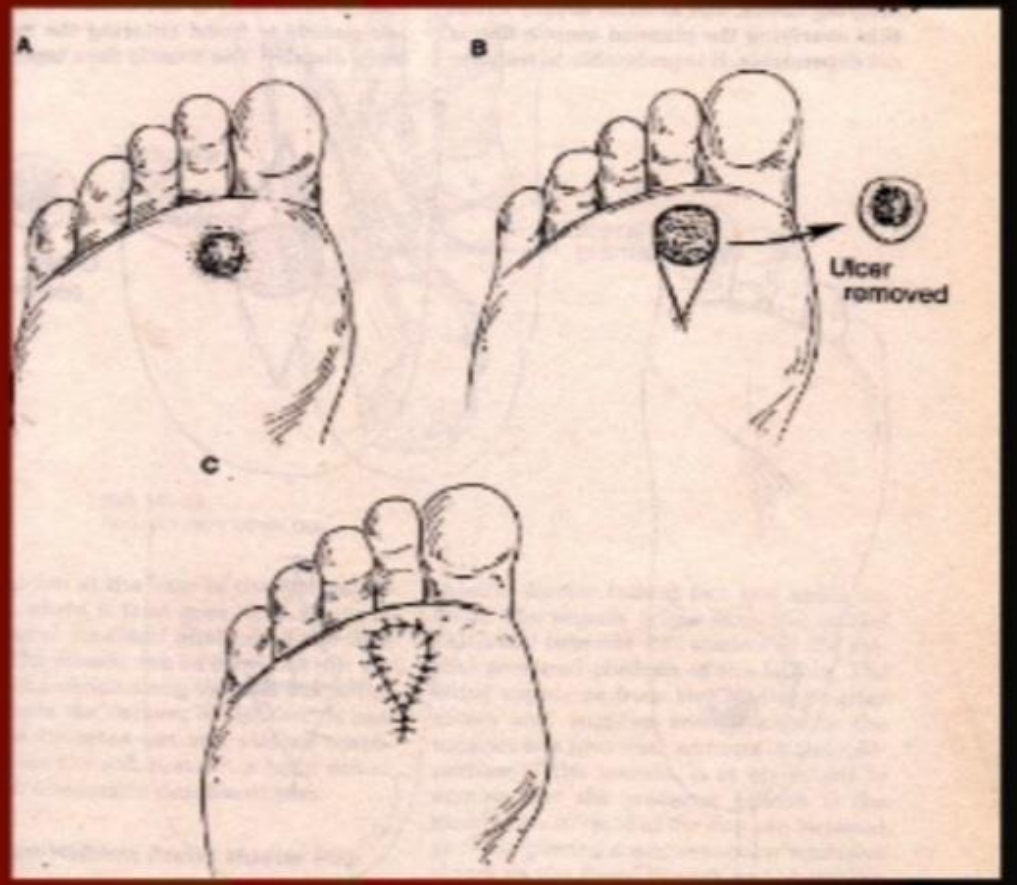
# SURGICAL TREATMENT OF DIABETIC FOOT

RECONSTRUCTION OF CHRONIC MID FOOT ULCER IN CHARCOT`S FOOT



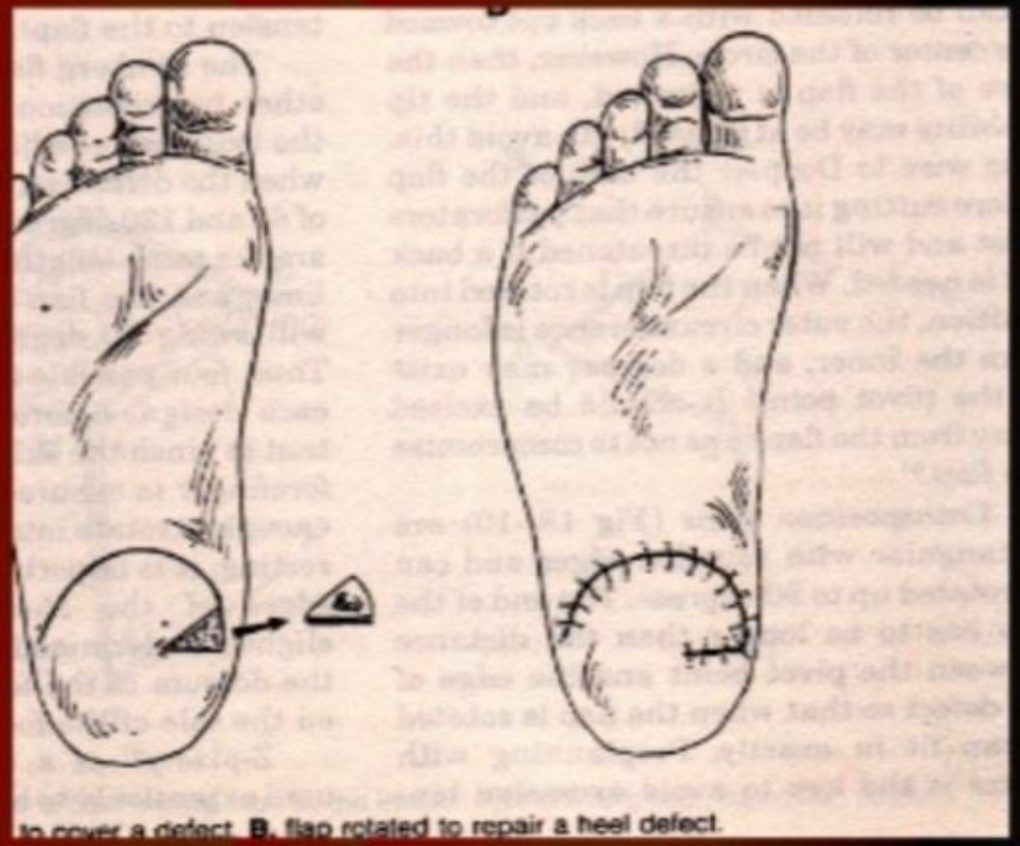
# SURGICAL TREATMENT OF DIABETIC FOOT

## CLOSURE OF FORE FOOT ULCER



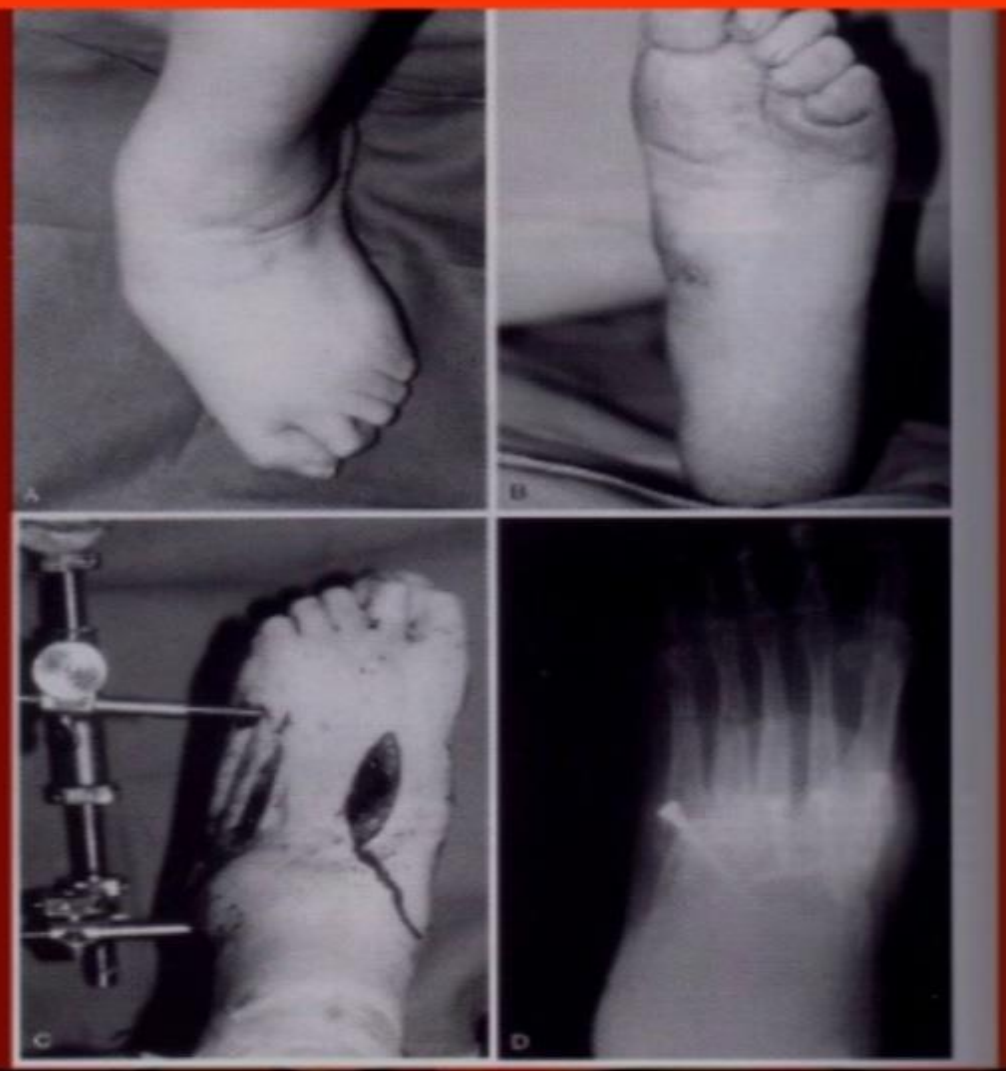
# SURGICAL TREATMENT OF DIABETIC FOOT

## RECONSTRUCTION OF CHRONIC HEEL ULCER



to cover a defect. **B**, flap rotated to repair a heel defect.

# SURGICAL TREATMENT OF CHARCOT`S FOOT



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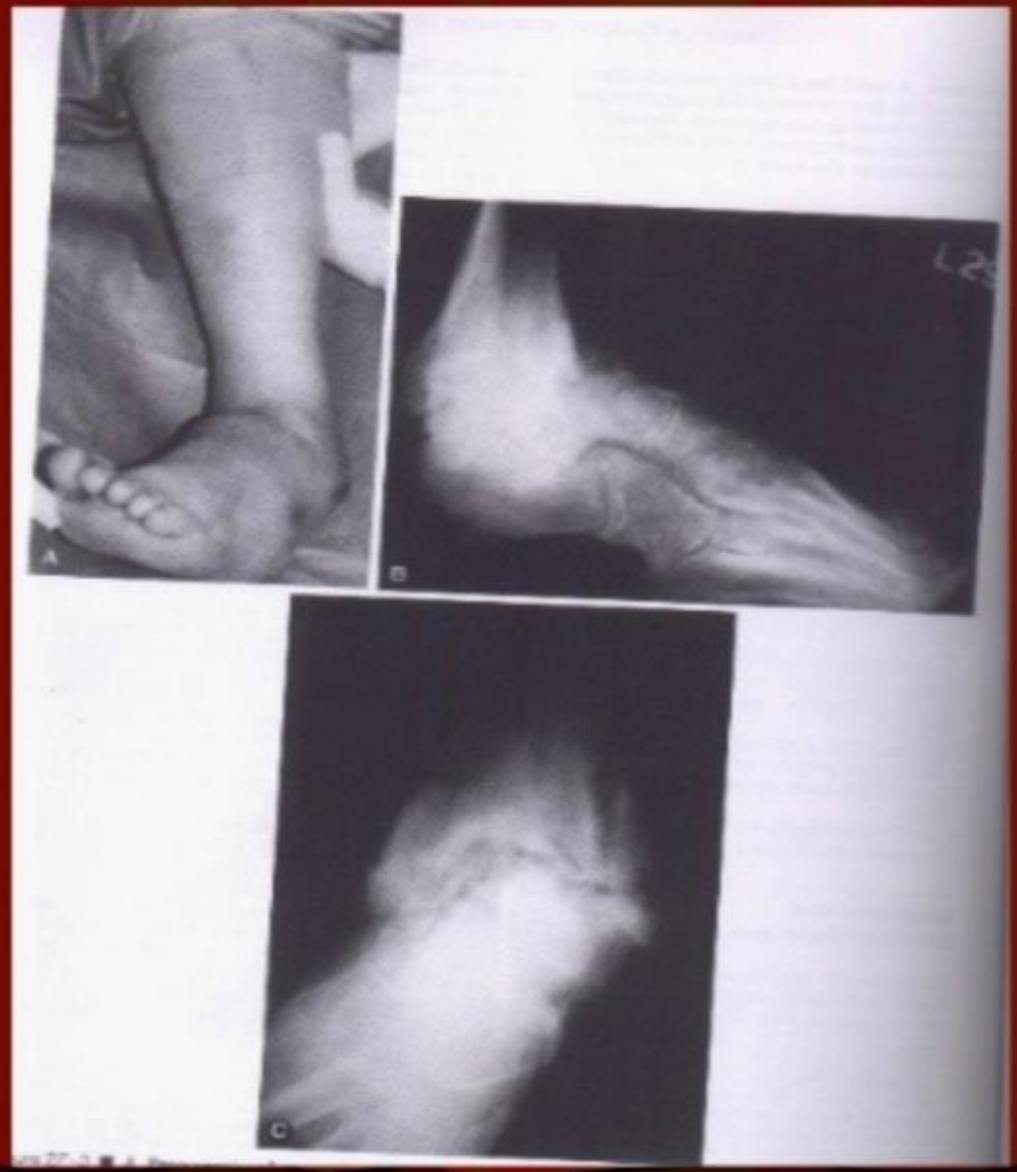

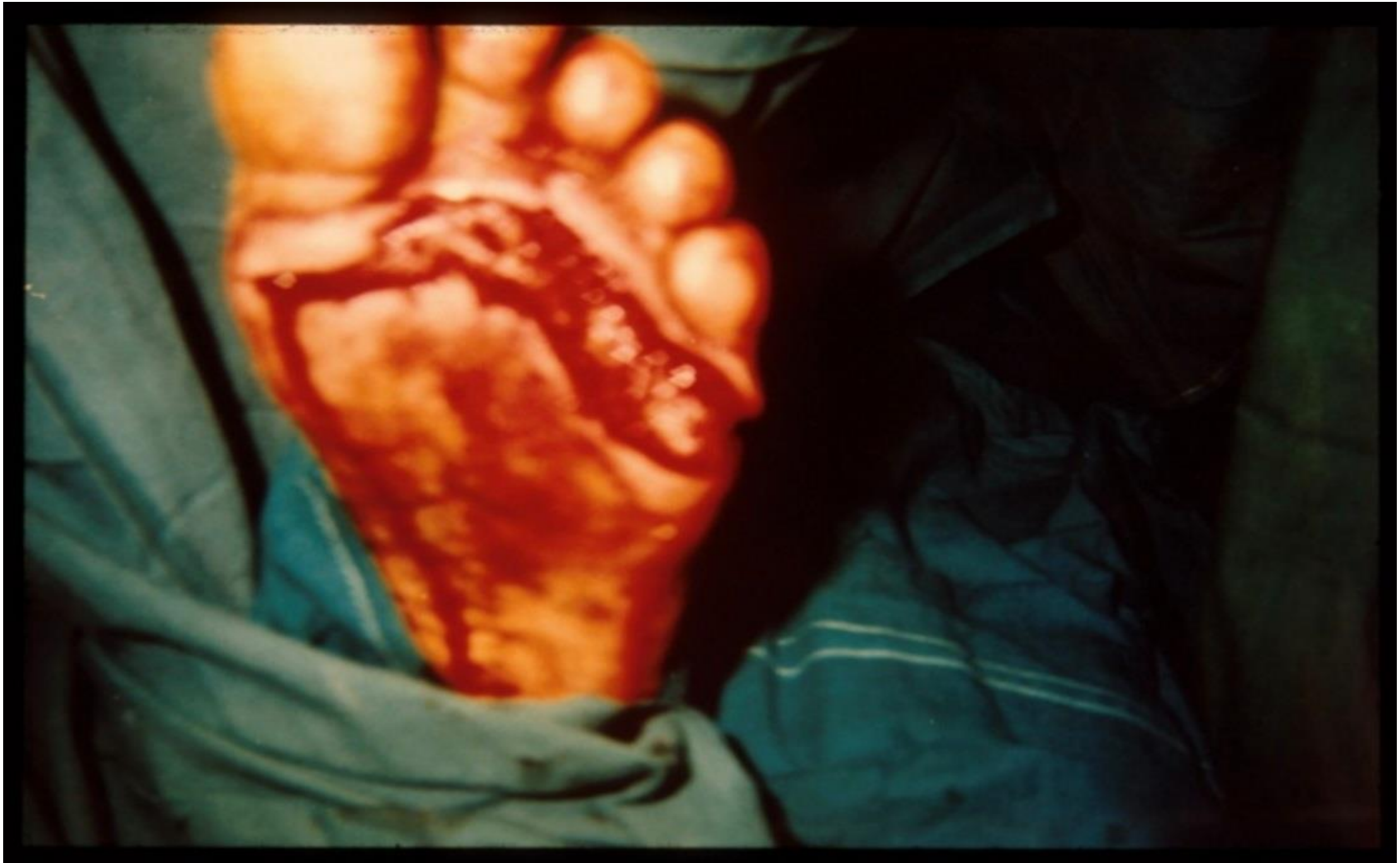

# SURGICAL TREATMENT OF DIABETIC FOOT

BILATERAL FOOT ABCESSESS

# SURGICAL TREATMENT OF DIABETIC FOOT

HEALED BILATERAL PLANTAR ABCESS WITH TOTAL OFF LOADING AND MOIST ENVIRONMENT DRESSINGS

# SURGICAL TREATMENT OF DIABETIC FOOT

BILATERAL DEFORMED WALKABLE FOOT

# SURGICAL TREATMENT OF DIABETIC FOOT

DEFORMED FOOT IS BETTER THAN A SOPHISTICATED PROSTHESIS

# SURGICAL TREATMENT OF DIABETIC FOOT

REMOVAL OF TENDONS OF FHL AND T.POST FOR TENOSYNOVITIS WITH ABCESS


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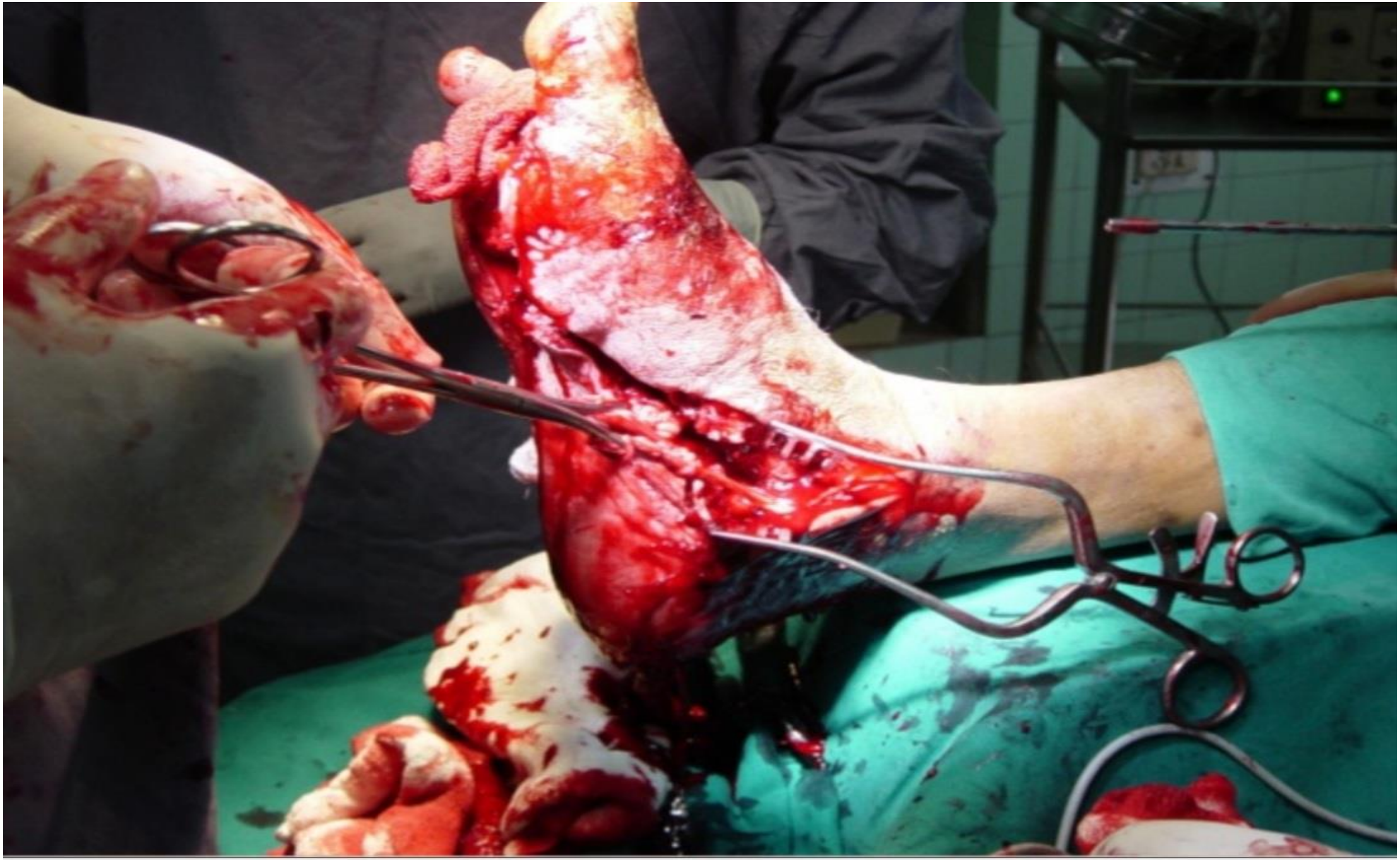

# SURGICAL TREATMENT OF DIABETIC FOOT

HEEL ABCESS FOLLOWING INFECTED FISSURES

# SURGICAL TREATMENT OF DIABETIC FOOT

TOTAL DEROOFING OF HEEL ABCESS

# SURGICAL TREATMENT OF DIABETIC FOOT

NECROTISING FASCITIS

PRE OPERATIVE

# SURGICAL TREATMENT OF DIABETIC FOOT

- NECROTISING FASCITIS AFTER TOTAL DEROOFING *ICEBERG PHENOMENON*

# SURGICAL TREATMENT OF DIABETIC FOOT

- HEALED MEDIAL PLANTAR SPACE ABCESS

# SURGICAL TREATMENT OF DIABETIC FOOT

HEALED
CENTRAL
PLANTAR
SPACE
ABCESS

# SURGICAL TREATMENT OF DIEBTIC FOOT

HEALED
LATERAL
PLANTAR
SPACE
ABCESS

# *DIABTIC FOOT SURGERY*

# FOOT EXPLORATION

# TAKE HOME MESSAGES

- EARLY RADICAL DEBRIDEMENT UNDER REGIONAL/LOCAL ANASTHESIA CAN PREVENT LEG AMPUTATION IN DIABETES
- CORRECT VASCULAR ASSESSMENT AND STRICT OFF LOADING ARE KEYS TO SUCCESS IN DIABETIC FOOT SURGERY

# TAKE HOME MESSAGES

- AVOID USE OF DRESSING MATERIAL WHICH PREVENTS MOIST WOUND ENVIRONMENT
- CORRECTION OF FOOT BIOMECHANICS AFTER WOUND HELAS

# NEED TO REVIVE THE AGE OLD CULTURE OF FOOTCARE AND FOOTWEAR