

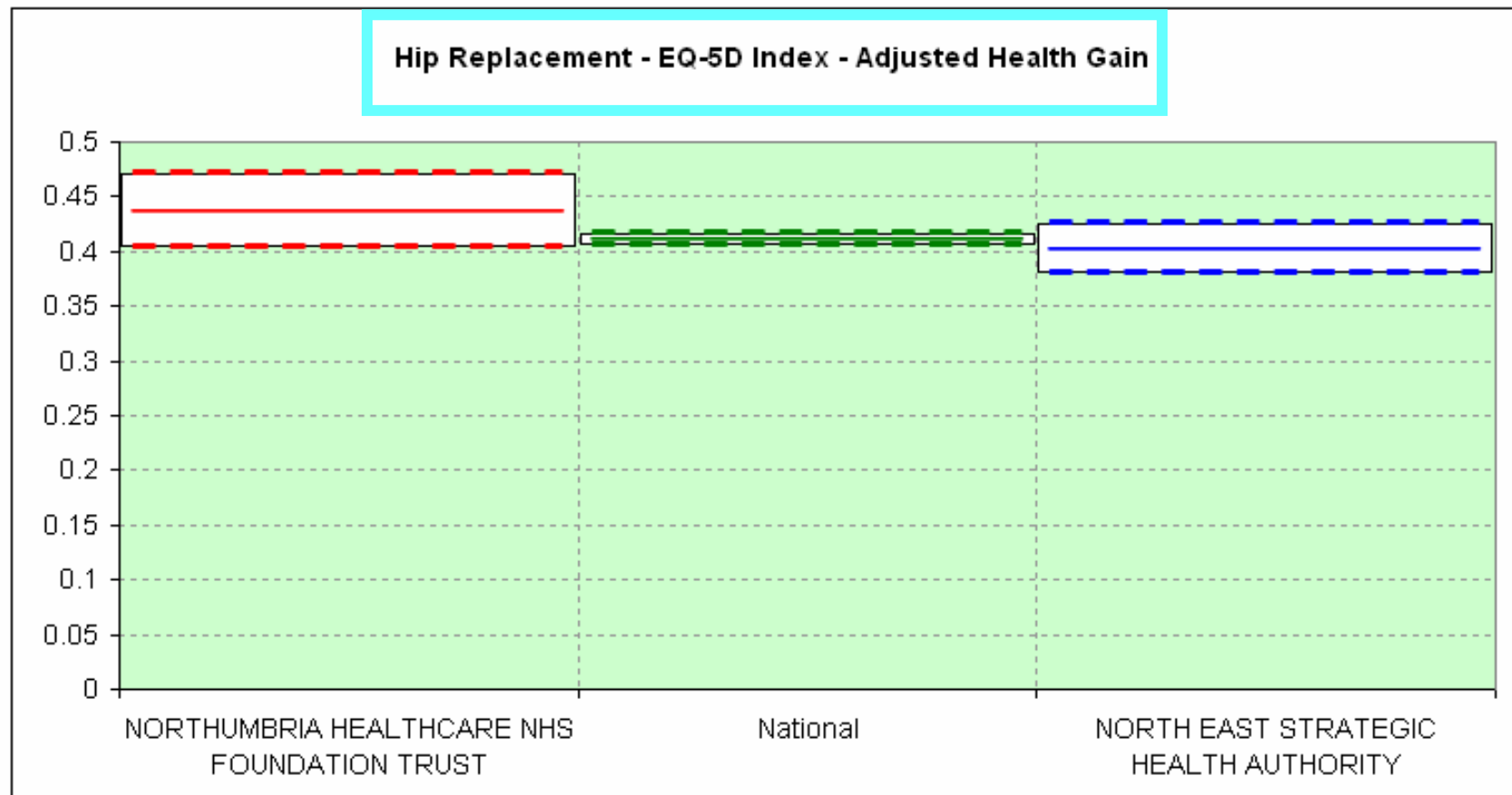
# When to say “*goodbye*” to the foot

Mike Reed MD FRCS(T&O)



### Hip Replacement

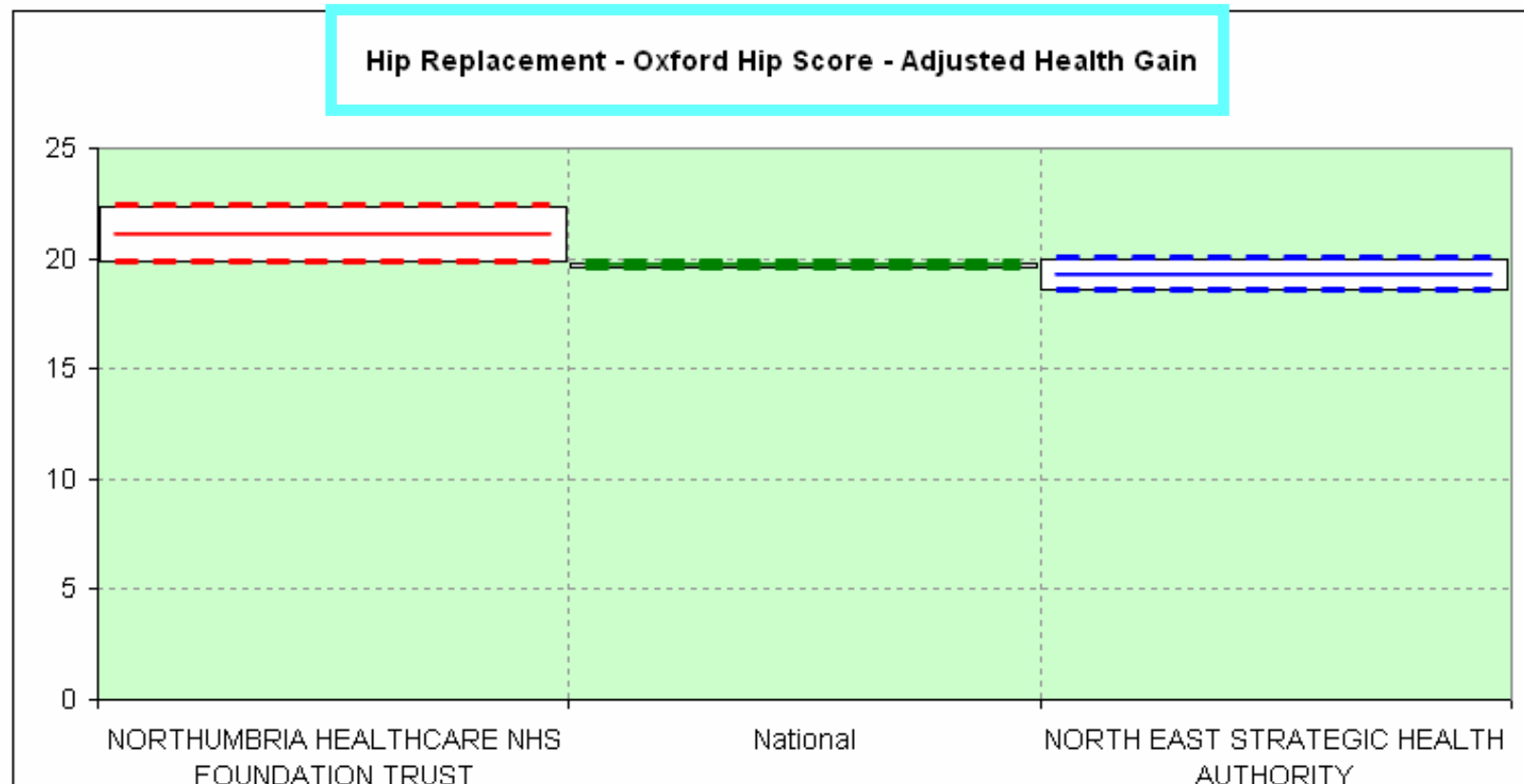
EQ5D Index	NORTHUMBRIA HEALTHCARE NHS FOUNDATION TRUST	National	NORTH EAST STRATEGIC HEALTH AUTHORITY
Modelled questionnaire count	324	27,368	1,360
Increase	289	23,892	1,163
Same	23	1,691	101
Decrease	12	1,785	96
Upper confidence interval	0.471	0.416	0.425
Adjusted health gain	0.437	0.411	0.402
Lower confidence interval	0.404	0.406	0.379
Average pre-operative score	0.381	0.349	0.322
Average post-operative score	0.802	0.76	0.728



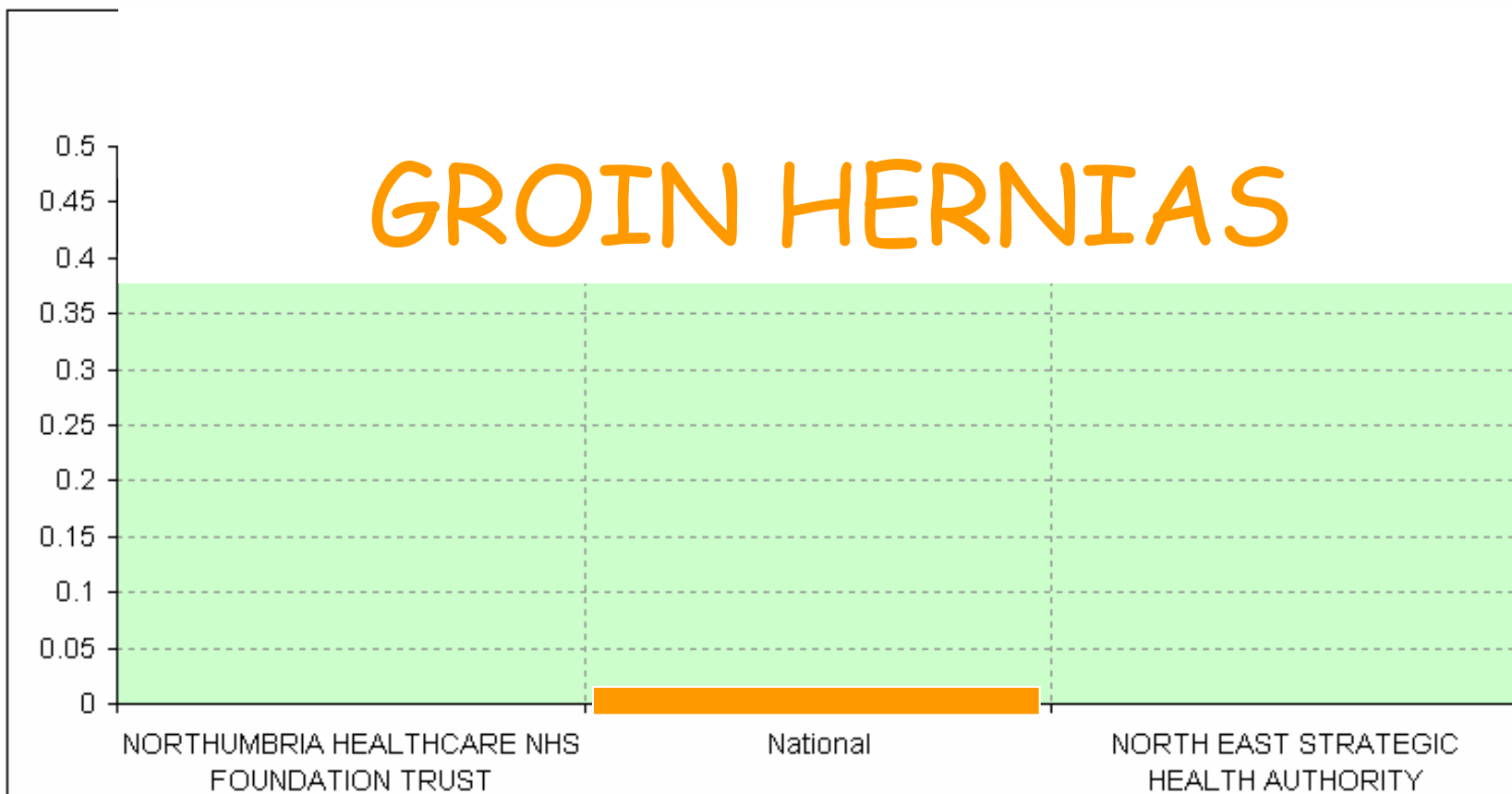
### Hip Replacement

Oxford Hip Score	NORTHUMBRIA HEALTHCARE NHS FOUNDATION TRUST	National	NORTH EAST STRATEGIC HEALTH AUTHORITY
Modelled questionnaire count	348	30,177	1,486
Increase	335	28,925	1,417
Same	*	185	10
Decrease	*	1,067	59
Upper confidence interval	22.311	19.823	19.962
Adjusted health gain	21.026	19.664	19.207
Lower confidence interval	19.74	19.505	18.453
Average pre-operative score	19.313	18.141	17.462
Average post-operative score	39.661	37.805	36.534

Hip Replacement - Oxford Hip Score - Adjusted Health Gain



# GROIN HERNIAS



# Medical Research £10B

- Diabetes is key stream – 7% population
- Diabetic foot disease is expensive
  - 9% secondary care budget
  - 2% secondary care budget - diabetic feet
- Diabetic ulcer patients 5 year mortality 44%
- One in 6 patients with ulcers require amputation ...eventually

# Key considerations for surgery

- History
- Exam
  - Shoes and walk
  - Foot temp
  - Corns / callus
  - Site and Size of ulcer
    - Max Length / width
  - Base of ulcer –
    - granulation, necrotic, fibrous
    - bone

## “Probe to bone” test

- 50% positive predictive value for osteomyelitis
- 98% negative
- Thus - Osteomyelitis unlikely if you cannot probe bone in ulcer

# Examination

- Deformity
  - ROM, hind foot deformity, Charcot, Claw toes
- Vascular exam –
  - Hair loss
  - Shiny skin
  - Pulses – present / diminished / absent
    - The presence of pulses and the absence of symptoms has a negative predictive
    - However, the absence of pulses has a sensitivity of 71% in predicting peripheral vascular disease, and dictates the need for further vascular assessment
  - Neuro exam –
    - Sensory
    - Motor
    - Autonomic





**Sensation threshold screening using a 10 gram monofilament(also known as Semmes-Weinstein monofilament)**

1. Use the 10g monofilament to test sensation.
2. The sites to be tested are indicated on the foot diagram below.
3. Apply the filament perpendicular to the skin's surface ( see Diagram A).
4. The approach, skin contact and departure of the monofilament should be approximately 1.5 seconds duration.
5. Apply sufficient force to allow the filament to bend ( see Diagram B).
6. Do not allow the filament to slide across the skin or make repetitive contact at the test site.
7. Randomise the order and timing of successive tests.
8. Do not apply to an ulcer site, callous , scar or necrotic tissue.



Diagram A

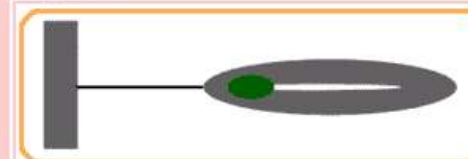
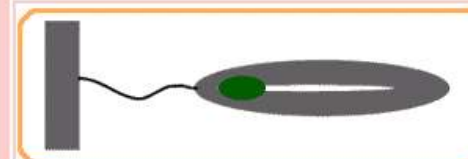
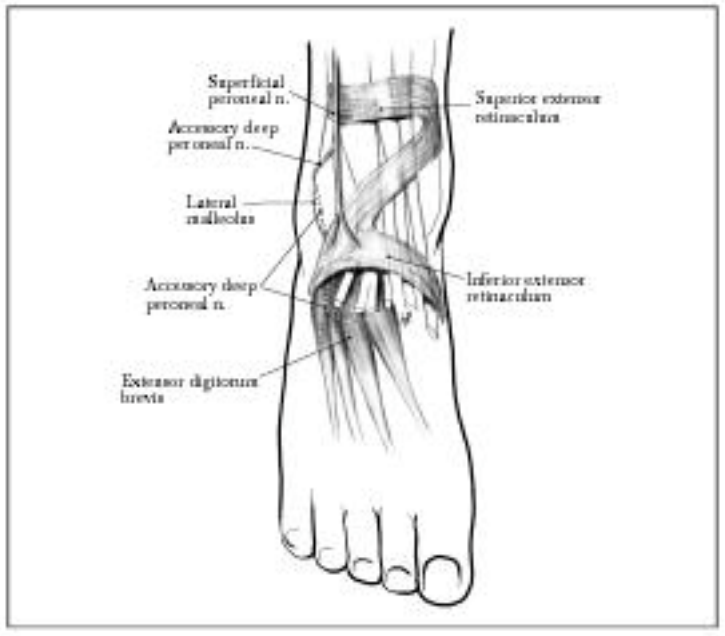


Diagram B



The circles represent the places on the foot to test with the monofilament

Consider your feet to be "at risk" if you cannot feel the 10gm monofilament at any of the sites marked.



# Xrays

- Deformity
- Arthritis
- Osteomyelitis
  - Loss of trabecular bone
  - Periosteal reaction
  - Bone destruction
  - Soft tissue swelling

# MRI for hot swollen foot

- Abscess
- Confusion?
  
- Charcot – supportive and medical treatments

Needs intervention?

Infected

```
graph TD; A[Infected] --> B[Neuropathic <--> Ischaemic];
```

Neuropathic



Ischaemic

## Need access to ...

- Vascular surgery
- Debridement
- Total contact cast – 90% in 9 weeks
  
- Achilles tendon lengthening
- Exostectomy
- Amputations

# Debridement

- Removes inhibitory components
- Turns on acute inflammatory response
- Weekly proven in RCTs better than dressings
  
- Remember to send deep samples
- Versajet

## Need access to ...

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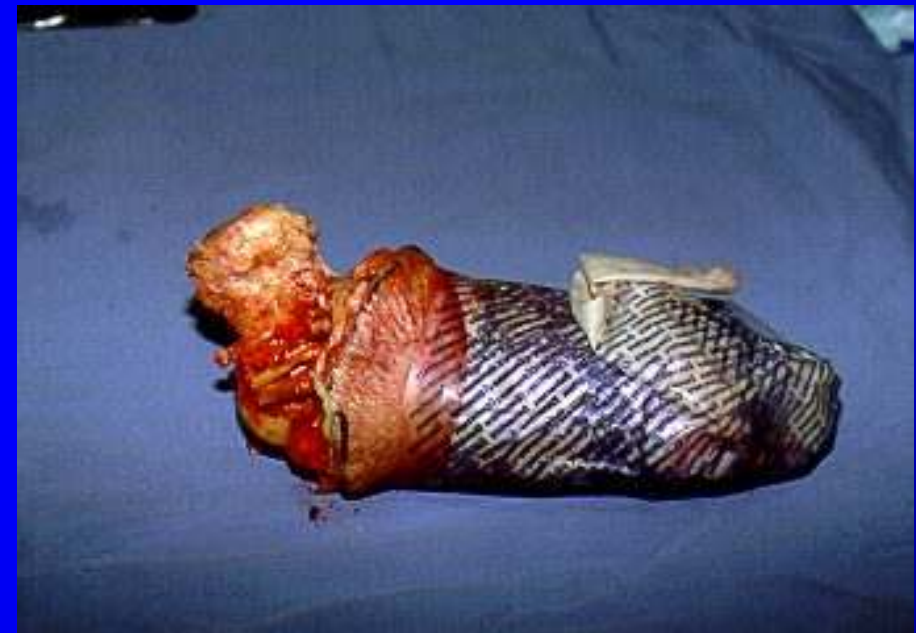




# Exostectomy

- Heal ulcers with TCC
- Make skin incision on medial and lateral border through intact skin
- Elevate periosteum
- Use a small power saw then a rasp
- Preserve or reattach major tendons
- Consider Achilles tendon release
- TCC

# Amputations in Diabetes



# Counseling

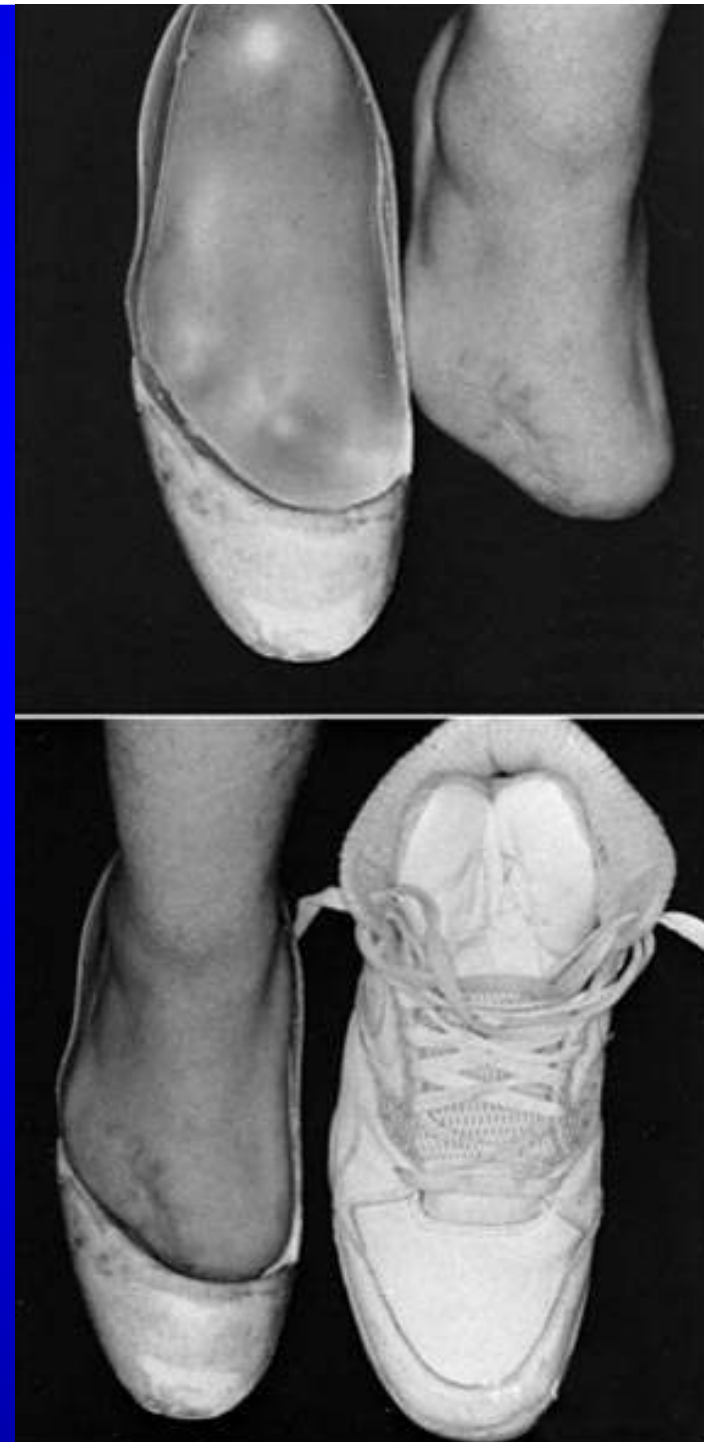
- Realistic goals
- Pre-op education
- Regional referral

# Levels of Amputation

- Digital
- Ray
- Syme
- Below Knee

# Digital amputation

- Single digit amputation
  - Minor/ no disturbance of stance/ gait
- Hallux amputation
  - Limp on fast walk/ run
- Multiple toe requires shoe filler



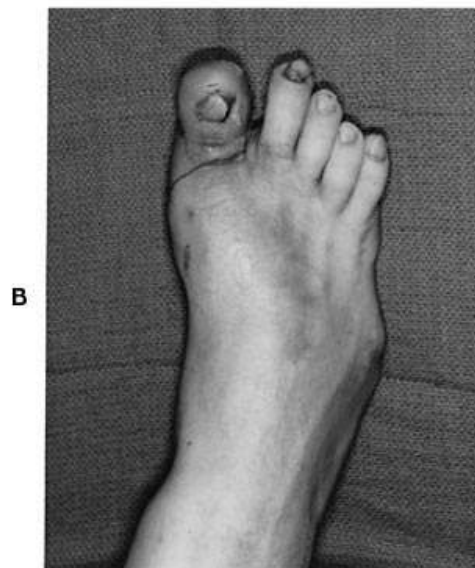
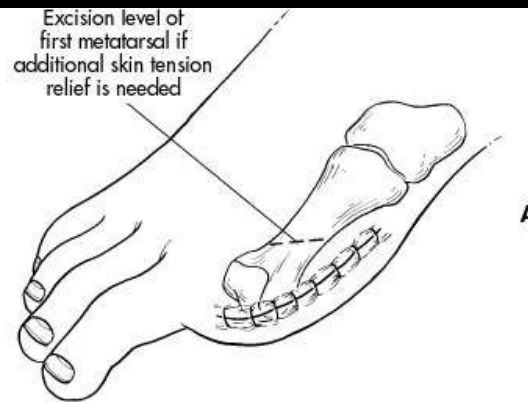




**C**



1<sup>st</sup> MTPJ  
Diabetic  
ulcer with  
underlying  
osteomyelitis

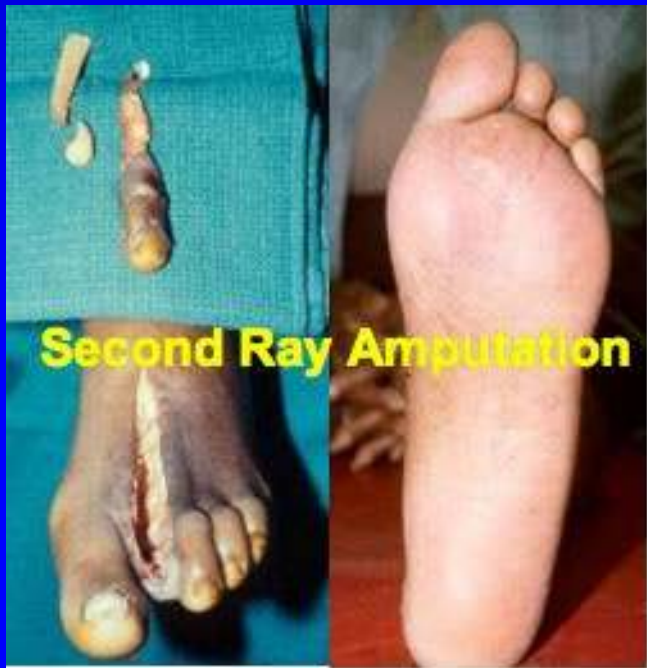
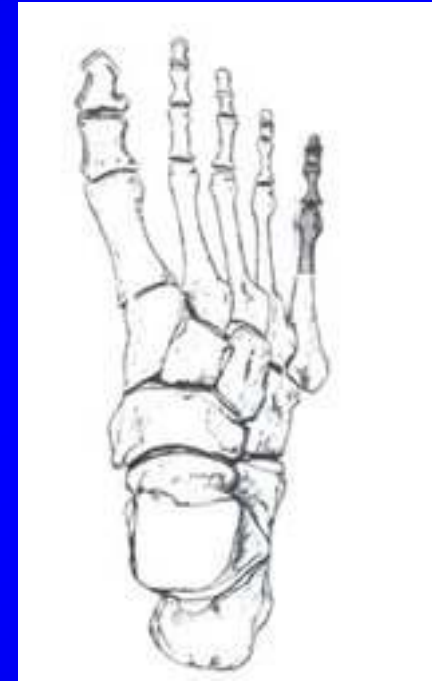
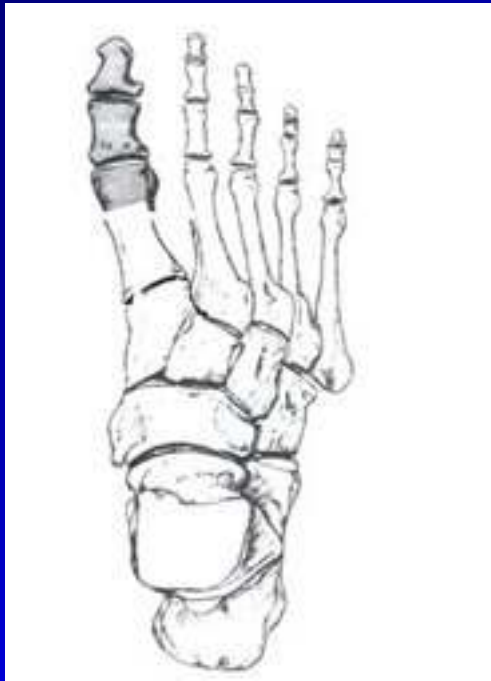






# Ray amputation





# Trans-metatarsal

- Often diabetic patients don't do well
- Wet gangrene of *Gt* toe/  
multiple toes



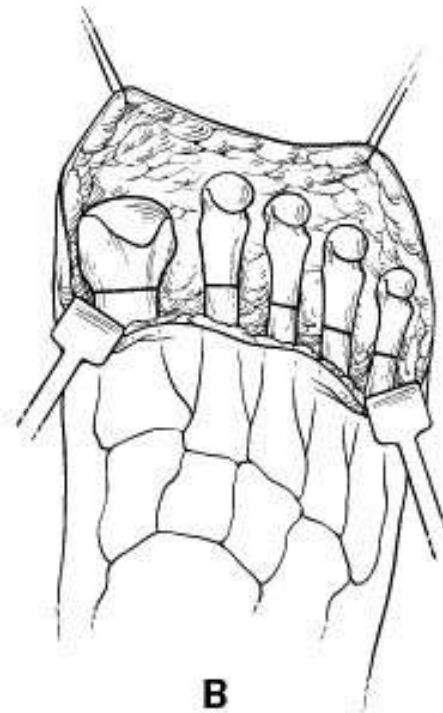
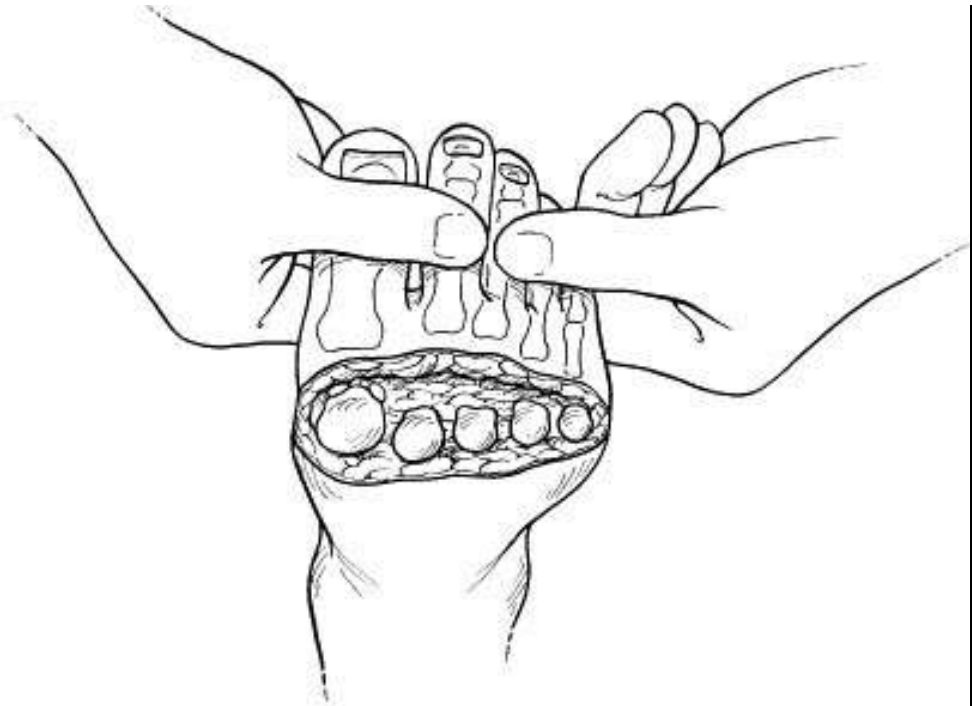
**A**



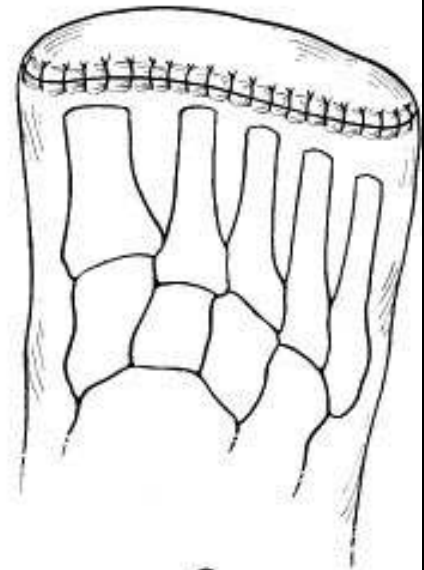
Dorsal  
incision



Plantar  
incision



**B**



**C**





# Syme

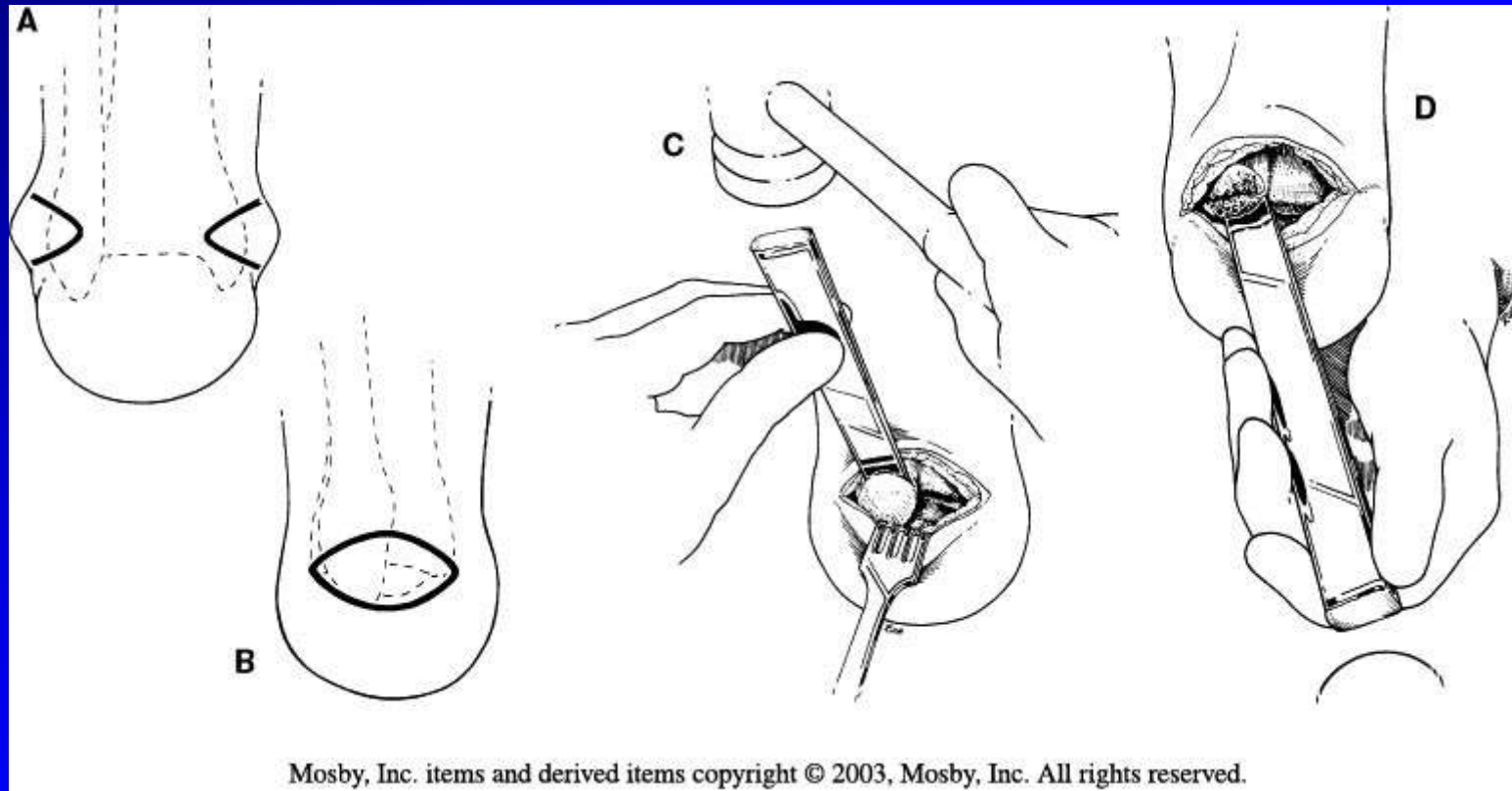
- Leaves enough space for prosthetic ankle mechanism
- Stable end bearing stump
- Bone section 0.6cm prox to ankle joint
- Retain heel pad fat
- 2 stage Syme for infection
  
- **Problems** (Gaine & McCreath JBJS(Br) 1996)
  - Posterior migration of heel pad
  - Skin necrosis from over-trimming dog-ears
  - cosmesis







# Two Stage Syme



## 1<sup>st</sup> stage

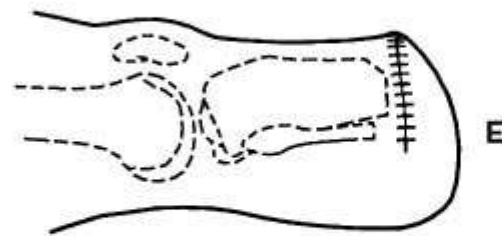
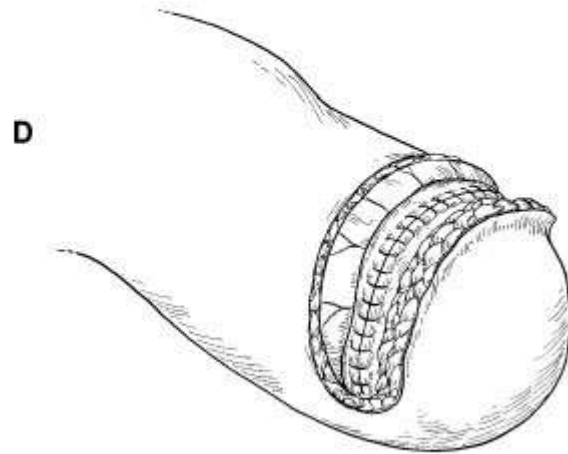
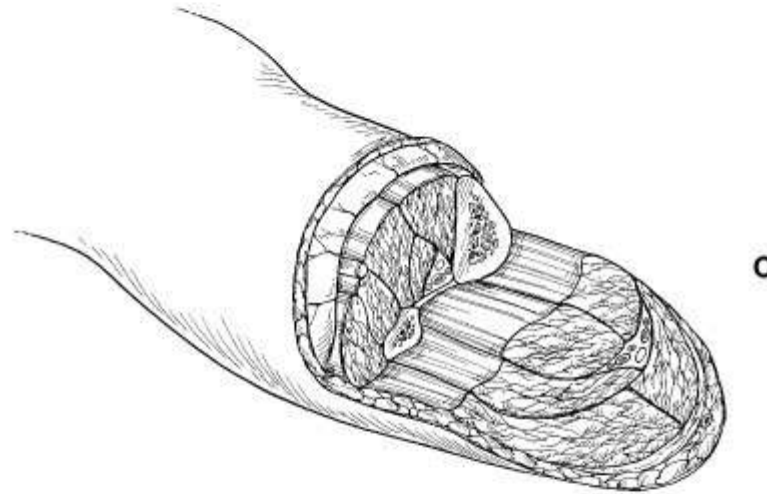
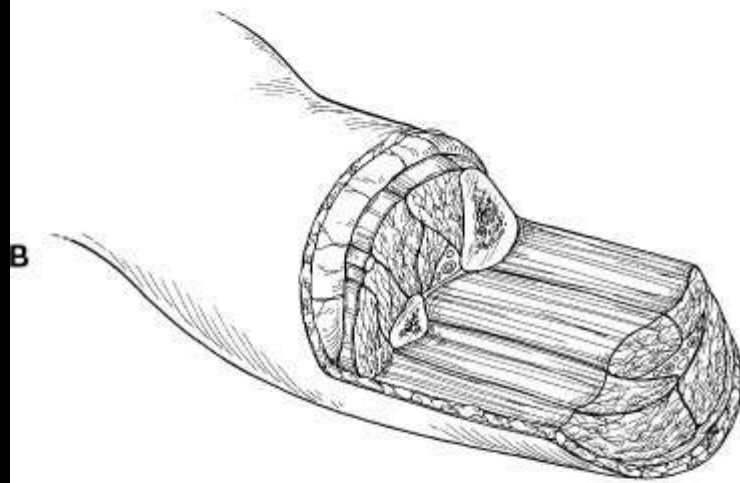
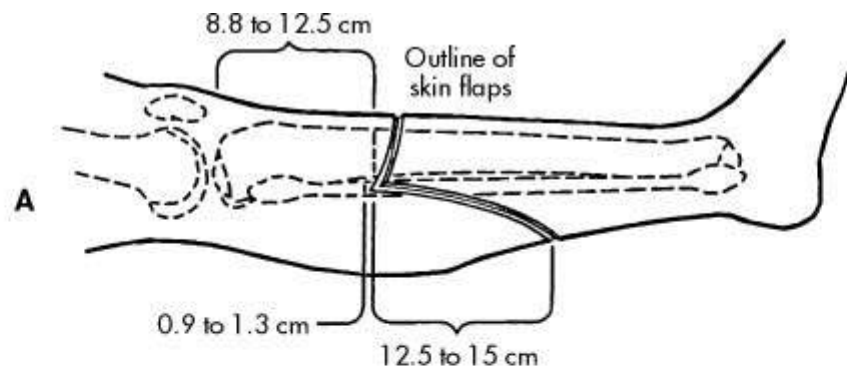
- Ankle disarticulation
- Preserve cartilage
- Instill antibiotics
- Close wound

## 2<sup>nd</sup> stage

- At 6 weeks
- Excise dog-ears
- Resect malleoli & metaphyseal flares

# Below Knee

- Most commonly performed
- Good functional outcome
- Gait retraining required..
- If 2 stage then 1<sup>st</sup> stage should be distal to final level



# Summary

- Pre-op assessment of safe level
- Consider 2 stage for infection
- Consider functional outcome when choosing level

# Questions

