



Thames Valley Spire 2011  
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**SURGICAL  
 MANAGEMENT  
 OF CORNS**

**DO PATIENTS EVER COMPLAIN?**

<p><b>● What Patients Say!</b></p> <ul style="list-style-type: none"> <li>● You didn't take all the com out last time</li> <li>● The com bled last time</li> <li>● You forgot to do the com</li> <li>● Didn't last very long</li> <li>● Still hurts inside my nice shoes</li> <li>● Don't want to use a pad every day</li> </ul>	<p><b>What Patients Don't Say!!!!</b></p> <p>You've cured it</p> <p>I should have worn lower heels              I should lose two stone              I should get wider shoes              I should use orthotics and insoles inside every shoe              I should use cream on my feet              I should use pads between my toes              I should have treatment every 2-3 months</p>
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**WHAT YOUR FEET DO**

- The average person walks the equivalent of five times around the earth in a lifetime
- In simple walking each step can exert up to two times your body weight
- A 10 stone person will have between 15 and 20 stone of impact going through the heel.
- Considering the distance covered, and the hazards our feet are exposed to during a working lifetime, it is no wonder that feet need care
- Your feet bear the brunt of your daily working life. Prolonged standing, walking, operating machinery, high heels.

**FOOT PAIN IN THE UK**

- In the UK, it is thought that 75 to 80 percent of the adult population has some form of foot problem,
- over 60 percent will suffer from a foot problem at some point in their lives.
- Many people put up with foot pain believing it to be normal.
- We have all heard the excuses... "I'm breaking the shoes in", "I'm on them all day, what do you expect," to name but a few.
- However persistent pain should not be an every day occurrence, and is the body's warning system that something is wrong.

**FOOT PAIN SOURCE: CLASSIFICATION**

- **Intrinsic Foot Pain**
  - Bone & Joint Pain,
  - Vascular,
  - Neural, Soft Tissue. etc
- **Systemic Foot Pain**
  - Medical, RA, Gout, Neurological, Endocrine etc
- **Trauma**
  - Fractures, Change Structure and Function etc
- **Congenital**
  - Proximal MSK pathology etc

**SYSTEMIC INFLUENCE ON FOOT SHAPE AND FUNCTION**

<p><b>● Deforming Disease of Joints</b></p> <ul style="list-style-type: none"> <li>● RA</li> <li>● Psoriatic Arthritis</li> <li>● Gout</li> <li>● Neuropathic</li> <li>● Neurological</li> <li>● Pain</li> </ul> <p>● THESE WILL CHANGE STRUCTURE AND FUNCTION</p>	<p><b>● Change in Tissue structure</b></p> <ul style="list-style-type: none"> <li>● Ischaemic Changes</li> <li>● Diabetes</li> <li>● Drug use</li> <li>● Medical</li> <li>● Social</li> <li>● Auto immune disease</li> </ul> <p>● THESE WILL CHANGE TISSUE QUALITY</p>
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**Systemic influence on feet**

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**● Deforming Disease of Joints**

- RA
- Psoriatic Arthritis
- Gout
- Neuropathic
- Neurological
- Pain

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**● Deforming Disease of Joints**

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● THESE WILL CHANGE STRUCTURE AND FUNCTION





**External Influence on Feet**

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- TRAUMA
  - Direct
  - Indirect
- Occupation
- Sports
- Social
- Infection


● THESE WILL INFLUENCE STRUCTURE AND FUNCTION

### EXTERNAL INFLUENCE ON FEET


- **TRAUMA**
  - Direct
  - Indirect
- Occupation
- Sports
- Social

THESE WILL INFLUENCE  
STRUCTURE AND FUNCTION



### Smoking

- Atrophic Skin
- Atrophic Nails
- Vascular Changes
- Skin Quality Reduced
- Soft Tissue Quality Reduced
- Poor Healing
- Thick Horny Corns

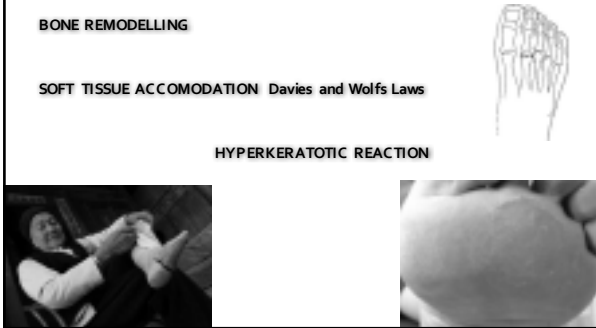


### CHANGE IN FOOT STRUCTURE AND FUNCTION

**BONE REMODELLING**

**SOFT TISSUE ACCOMODATION** Davies and Wolfs Laws

**HYPERKERATOTIC REACTION**




### Skin Reaction to Trauma



### Definition of a Corn

- A corn is a specially-shaped calus of dead skin that usually occurs on thin or glabrous (hairless and smooth) skin surfaces, especially on the dorsal surface of toes. They can sometimes occur on the thicker plantar skin surfaces.
- Corns form when the pressure point against the skin traces an elliptical or semi-elliptical path during the rubbing motion, the center of which is at the point of pressure, gradually widening.
- If there is constant stimulation of the tissue producing the corns, even after the corn is surgically removed, the skin may continue to grow as a corn.

## Hard Corns

- A hard corn, or heloma durum, is notable for its dry, horny appearance. It is found most commonly over the interphalangeal joints and the apex of toes and under the MTP Joints



## Soft Corns

- soft corns, or heloma molle.
- These are described as such because of their macerated texture secondary to moisture.
- It is generally found in interdigital locations



## Seed Corns

- Also called porokeratotic lesions or plugged sweat ducts.
- Note that these corns seem to occur in the middle of a more typical and regular callus.
- They seem to be a specialised callus.
- Whatever they are called they are aggravating.
- They grow into a second little callus that feels like you are walking on a little grain of sand or rice.
- When you pick at them you often get a little piece of skin from the center that people sometimes mistake for a "seed", hence the name.



## Neurovascular Corns

Neuro-vascular corns. Consist of nerve tissue as well as blood vessels forming within the growing corn. These types can be very painful and often become inflamed.



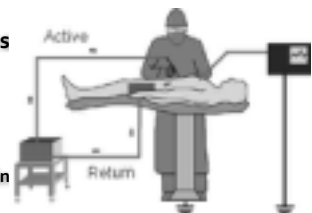
## Skin Surgery

- The most efficient method of plantar wart eradication is Electro-surgery\*
- This was developed to include corn surgery



## ELECTROSURGERY

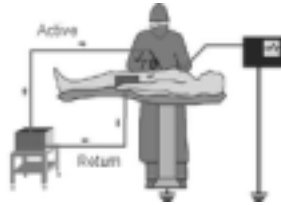
- The system comprises
  - An electro-surgery power unit
  - An active electrode
  - A dispersive electrode (return) or 'antenna' in VHF units



## ELECTROSURGERY

- **MONOPOLAR**

- Rf current via active electrode passes through patient to return pad
- Modern units - the patient is not part of the circuit, return via non-contact 'antenna'



## ELECTROSURGERY

- **TISSUE EFFECTS**

- Tissue effects change as waveform modified:

Continuous HF current=clean cut with no haemostasis

↓  
decrease duty cycle (i.e. time current on)

↓  
Coagulation – less heat=no tissue vaporisation; coagulum produced

## ELECTROSURGERY

- However, the active electrode shape and size also plays a part in the effects on tissues

- Common configurations include:

- Needle
- Loop
- Ball
- Blade

## ELECTROSURGERY

- **Thus:**

- Tissue destruction occurs at the site of entry of current and is a function of duty cycle and electrode size
- A small electrode size concentrates the delivered energy
- It is important, therefore, that the dispersive electrode is large to keep temperatures below the level of tissue damage OR VHF unit with no patient return pad connection

## ELECTROSURGERY

- Loops are extremely useful to remove warts and verrucae



## ELECTROSURGERY

- Wart removed with the loop electrode



## ELECTROSURGERY

- Ball electrodes are often used for haemostasis or desiccation.
- Here it is being used for haemostasis following a loop excision



## ELECTROSURGERY

- Here it is being used for desiccation of a corn



## ELECTROSURGERY

- Here a narrow blade electrode has been used for desiccation being inserted into the plantar corn



## ELECTROSURGERY

- Lesion curetted, base fulgurated for haemostasis



## Success rates for electrosurgical treatment

- 69 lesions reviewed ('corns')
- patient age 51-92yrs (mean 71.5)
- follow-up 18-120mth (mean 55mth)
- 24 (34.8%) resolved
- 8 (11.6%) improved
- 37 (53.6) failed
- 83% patients reported reduced pain

Wilkinson & Kilmartin 1998

## Blunt Dissection



### Blunt Dissection



### Blunt Dissection



### Blunt Dissection



### Blunt Dissection



### Regional Anaesthesia

- Popliteal Block      Bupivacaine
- Ankle Block        Bupivacaine with adrenaline
- Mayo Block        Lidocaine
- Digital Block        Lidocaine with adrenaline
- Floatation          Mepivacaine
- Prilocaine
- Adrenaline (Epinephrine) 1:10<sup>6</sup>
- Methylparaldehyde
- Lidocaine 1% + 0.001%
- Bupivacaine Hydrochloride

### Ankle Blocks

- The ankle block is a safe and effective method for obtaining anaesthesia and analgesia of the foot for surgical procedures on bones and soft tissues.
- Indications
- Surgical anaesthesia of the foot especially when general, epidural or spinal anaesthesia is contra-indicated.
- Forpost-operative analgesia.



## Biomechanical Examination

- Casted orthoses.
- Light weight carbon fibre construction.
- Made to fit patient perfectly.
- Made to address specific biomechanical problem



## When all else fails

You Have Tried

Routine Treatment

Footwear Advice

Orthotics, Padding

Keratolytics, Creams, etc

What Else

## Most Corns can be Improved by Bone Surgery

Aim of Treatment

- Remove Pressure from area by :

Reduce Bony underlying prominence

Reduce Fixed Deformity

Improve Function

## Corns on Bumps

- Hallux Valgus
- Bumpectomies



## Bumpectomy (Cheats Bunion)



## Common problems

Hammered Toes

Fixed Flexion Deformity  
At the PIP Joint

Corns over PIP Joint

Enlarged Joints cause  
interdigital corns



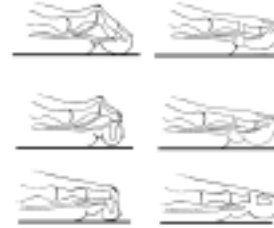
## Common problems

### Mallet Toes

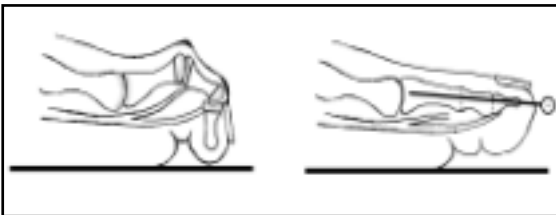
Fixed Flexion Deformity  
At the DIP Joint  
Corns over DIP Joint  
Corns at end on Apex of  
toe



## Digital Arthroplasty



## Digital Arthrodesis



## Digital Arthrodesis

- The StayFuse™ device is an interlocking two piece titanium screw that snaps together for intramedullary fusions of small bones. The StayFuse device is a replacement for 1.1 mm K-wires, and can be used for fusions or fracture fixation of fingers, toes and small bones.



## PIP Joint Corns



## DIP Joint Corns (Skin Incisions)



**DIP Joint Corns (Skin Incisions)**



**DIP Joint Corns (Skin Incisions)**



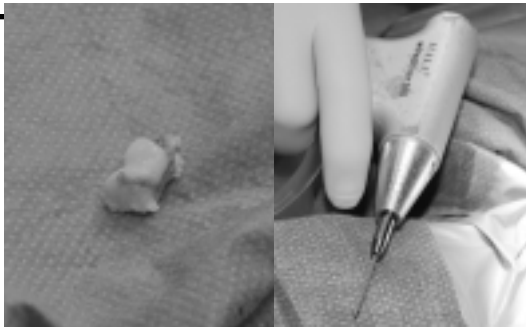
**PIP Joint Corns (Joint Capsule)**



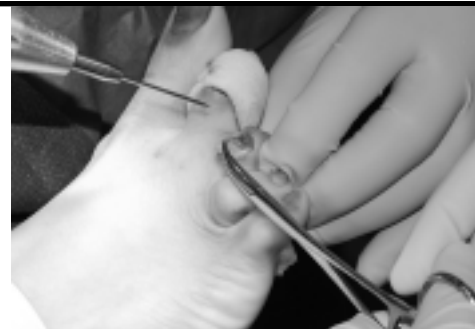
**PIP Joint Corns (PP Head Resection)**



**PIP Joint Corns (PP Head Resection)**



**PIP Joint Corns (PP Head Resection)**



**PIP Joint Corns (PP Head Resection)**



**PIP Joint Corns (K Wire Insertion)**



**PIP Joint Corns (K Wire Insertion)**



**PIP Joint Corns (K Wire Insertion)**



**PIP Joint Corns (K Wire Insertion)**



**PIP Joint Corns (K Wire Insertion)**



**PIP Joint Corns (Post Procedure LA)**



**PIP Joint Corns (Dressings)**



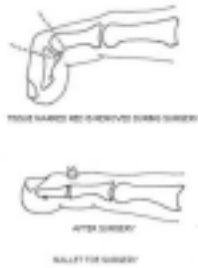
**DIP Joint Corns (Mallet Toes)**



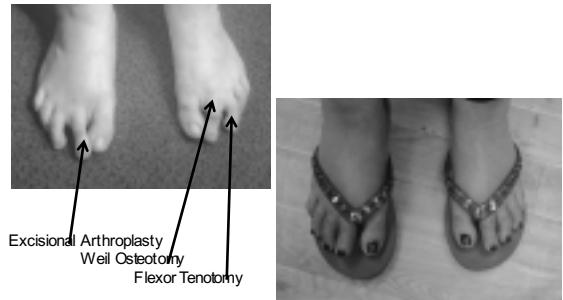
**DIP Joint Corns (Mallet Toes)**



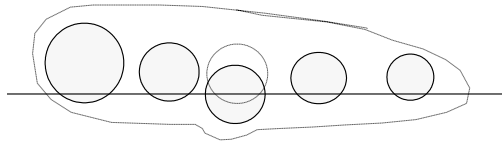
**Apex & DIP Joint Corns**



**Combined Procedures**



**Sub 2,3,4, MTP Joint Corns  
Long or Plantar Flexed Metatarsals**



The metatarsal may be long or dropped, making it take more weight than adjacent metatarsals.

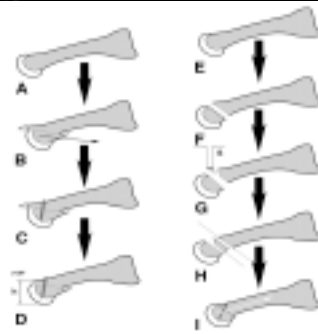
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**Sub 2,3,4, MTP Joint Corns  
Long or Plantar Flexed Metatarsals**

**Post operative advice**

Two weeks after surgery, the suture tags are cut and you can then bathe and swim.

You will need to return to thick-soled lace up shoe or trainers at this stage to help reduce swelling and protect the bone while it heals.

You can drive when you feel confident enough to perform an emergency stop.

Participation in impact sports is fine if everything is all right at your three-month review appointment.

It is normal for people to have four to six weeks off work for this type of operation.

**Sub 2,3,4, MTP Joint Corns  
Long or Plantar Flexed Metatarsals**

Specific complications of metatarsal surgery include:

- Transfer pain or skin lesion
- Floating toe.
- Joint stiffness
- Scar contracture
- Fracture
- Non-union of bone

**5<sup>th</sup> Toe Corns**



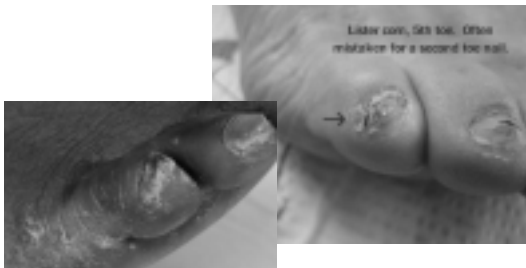
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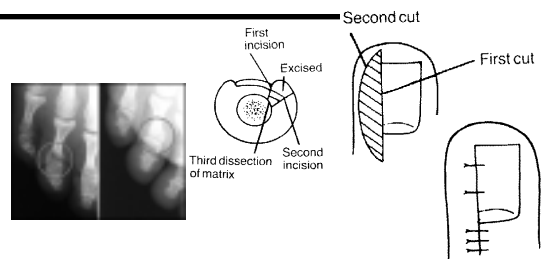
**5<sup>th</sup> Toe Corns**



**Lister Corns**



**Lister Corn Removal**



Winograd Procedure and removal of bone

### Soft Corn



### Cleft Corns



### Cleft Corns: Toe Syndactylisation



### DIP Joint Amputation



Partial or total amputation may be indicated where the toe is unsalvageable or where just correcting the position of the toe would be problematical.



Digital amputations have in the main been viewed as a procedure to be avoided at all costs and a sign of failure. In appropriate circumstances, a single or multiple, partial or total digital amputation might be the optimum solution, greatly improving a patient's foot health and consequently their quality of life.

### Toe Amputation



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### Complications

- General Complications of foot surgery include:
  - Prolonged swelling
  - Continued pain
  - Infection
  - Blood clot
  - Delayed healing
  - Thickened scar
  - Screw or pin movement
  - A chronic pain syndrome
  - Further surgery may be required



Any more questions?



Mike O'Neill  
Fixmyfeet.co.uk

Thank You

