Failures of the amputation stump during the rehabilitation

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Ethiology

- Lower limb amputation:
  - Dysvascular (*ASO, diabetic angiopathy,thrombangiitis obliterans*) 80%
  - Trauma
  - Tumor
  - Other diseases (*congenital, osteomyelitis, autoimmun diseases, Raynaud sy., SLE, scleroderma)*
- Upper limb amputation:
  - Trauma
  - Dysvascular
  - Tumor
  - Congenital
  - Other

Incidence

- Maior amputation — 3000-3500 / year
- Minor amputation — 3000-3500 / year

- The most common ethiology: Dysvascular problem, pain, gangrene, ischaemia
- The most common localisation: Lower extremities

- Amputations are applied mostly on the lower extremities of dysvascular patients
- Surgical technique has described for many decades

The standard stump

- standard amputation methods
  - Good blood supply
  - Good shape (conic)
  - Soft tissues
  - As long as possible (exception BK stump)

- Viability of the stump is essentially determined by blood circulation, vascular condition of the extremities
- Blood supply of the bones and soft tissues is the main factor

Failures of the amputation stump

- The level of the amputation is not correct
- Failure of blood supply of the stump
- Pain of the stump and necrosis of the wound are the most common signs of critical limb ischaemia
- Reamputation very often

Hematoma of the stump

- Surgical technique, LMWH, ASA, clopidogrel, post op. trauma
- Topical treatment, hematoma evacuation

Bacterial infection

- Soft tissues infection, local inflammation (erysipelas)
- Good arterial circulation
- Systemic antibiotic therapy and topical treatment

Minor trauma

- Patient's falling (bathroom, wheelchair transfer)
- Prostheses socket irritation, sometimes soft dressing irritation
- No wearing prostheses and wound treatment
- Surgical reconstruction (deep or large necrotic wound or osteomyelitis)

Sutures, crural ulcer

- Subcutaneus suture irritation
- Venous circulation disorder, deep ulcers

Clinical signs

- Signs of ischemia
  - Pain in rest
  - Surgical wound necrosis
  - The skin of the stump is cold, cyanotic or anaemic
- Inflammation, fewer
- Wounds and ulcers with difference size and depth
- Odema

Therapy

- No wearing prostheses in the first period of the treatment
- Bed rest
- Antibiotics (i.v.)
- Drugs (rheological infusions)
- Local cold, topical drugs
- Wound care, special dressings and techniques
- Reamputation

Diabetic foot

NEUROPATHY **ANGIOPATHY**

- Arterial pulse of the foot (ADP és ATP)
- Pain in rest
- Colour and temperature of the foot
- Radiological signs

Wound healing

- **Neuropathy,** osteoarthropathy (DOAP) – good expectation, mostly non-operative treatment, local resection of the foot
- **Angiopathy –** bad expectation, maior reamputation (AK, BK) often

Prevention

- Self care of the foot, podiatric treatment
- Diabetic-neuropathic shoes as a prevention
- Physiotherapy (keep good vascular condition)

Diabetic osteoarthropathy (DOAP)

- Severe changes in bone metabolism
- Increase bone resorption

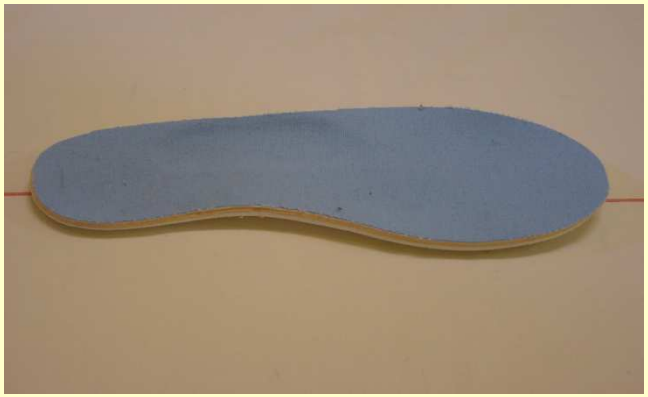
- Charcot-foot, diffuse atrophy of the bones
- Fractures, subluxation, luxation of the joints
- Severe bony destruction of the tarsal region and the midfoot
- Normal bone structure „dysappears”

Therapy

- Recovering period is very long → patience
- Bed rest, local cold, plaster splint,
- Antibiotics
- Wound care, special dressings
- Total offload of the affected foot
- Mobilisation (total contact plaster cast, custom made or adaptive AFO, partial weight walking)

Custom made AFO

- Tight fixation of the ankle, splinting of the foot
- More lightweight than the plaster cast
- Removable during the bath and wound care
- Complience (to require patient cooperation)
- Custom made fabrication
- Correction is possible many time during the rehabilitaton
- Foot orthoses together, relieve under the plantar trophic ulcer
- Support by NSS

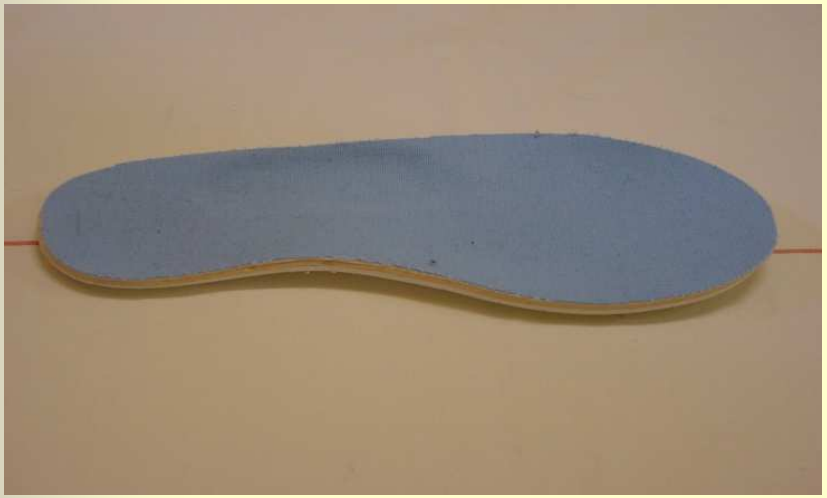


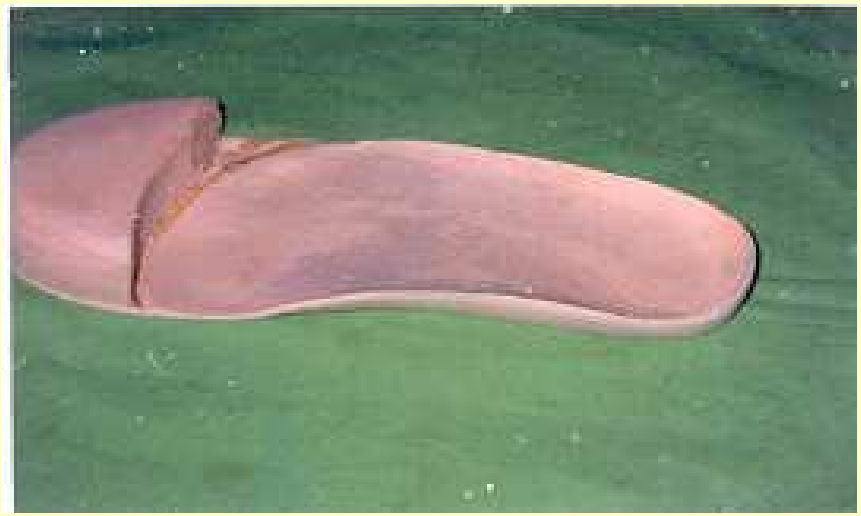
Neuropathic (diabetic) shoes

- Orthopaedics and rehabilitation prescription
- For therapy of the wounds and trophic ulcers of the foot
- Prevention aim
- After plaster cast or orthotic therapy in every time
- Support by NSS

Foot orthoses

- Pressure distributor function, for prevention plantar wounds
- Reduce local pressure under the chronic ulcer, therapeutic effect





Summery

- Selection of the correct amputation level is the main factor
- Amputation as distal as possible
- Standard surgical technique, no improvisation
- Antibiotics after the amputation
- Good quality and total contact prostheses
- Identification the cause of the stump failure (the cause of the wound)
- Adequate systemic therapy
- Adequate wound care (necrotic, granulating)
- Team-work (surgeon, rehab. doctor, dermatology, wound care nurse, physiotherapists)