Arthrodesis of the ankle and treatment with AFO in severe diabetic Charcot deformity or instability

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Diabetic neuropathy

- Destructions of the bones and joints can often be observed in severe cases of diabetic foot disorders.
- It shows the typical clinical and radiological image of osteoarthropathy (Charcot-foot).
- Pathological fractures of the bones, dislocation and subluxation of the joints.
- These changes lead to the deformation of the foot.
- Instability and pathological movement of the foot and ankle.
Diabetic neuropathy

- Clinical signs
  - Disability of walking, walking distance
  - Ankle and foot deformity
  - Ankle and foot instability

- Therapy
  - Non-operative or surgical procedure

- Therapy indications
  - Deformity or instability
  - Quality of the bones
  - Arterial blood supply
  - Septic conditions, signs
Non-operative therapy

- External fixation (plaster cast, custom made AFO)
- Long-time treatment (3-12 month)
- Patient
- Bone remodelling leads to weight bearing extremity
- The foot and ankle will be stable without any pain and pathological movement
Ankle arthrodesis

- Indication of the arthrodesis
  - Plaster cast or AFO is not enough to keep the foot and ankle alone in neutral and stable position
  - Plaster cast or plastic AFO can cause soft tissue wounds and ulcers after the 3-6 month of treatment, may therefore not possible to further use

- Arthrodesis of the ankle and subtalar joint is the treatment in these cases and wearing AFO is an adjuvant therapy after the operation
Ankle arthrodesis

- Indication
  - instability causes walking deficiency (stabilization)
  - leg deformity (varus or valgus) is not adjustable to the neutral position (correction and stabilization)
  - plaster cast or orthoses doesn’t allows stability enough

- Different methods and instruments (screw, metal plate, pin, fixateur externe)
Correction of the bad position of the ankle with arthrodesis

- Serious varus deformity, trophic ulcer
- Deformity of the foot, development of pathological pressure point, severe neuropathy and chronic local irritation
- Affected subtalar and talocrural joint
Correction with arthrodesis

- Resection of the joint surface
- Stabilization with two screws
- Reinforce with plaster cast
Correction with arthrodesis

- Arthrodesis was stable
- No loosening of the screws
- Plaster cast change to AFO

- Restore total plantar surface
- Plantar foot ulcer healed
Stabilization with arthrodesis

- Pathological movement in the talo-crural joint
- Instability
- Serious bone destruction
- Unable to walk
Stabilization with arthrodesis

- Resection of the talo-crural joint

- Stabilization with two screws
- Post op. plaster cast
Stabilization with arthrodesis

- Partial load walking during the rehabilitation
- Degree of the load was gradually increase
- Correct position of the ankle and foot
Stabilization with arthrodesis

- Good clinical result
- Orthopaedic shoes after AFO
- Lympoedema treatment
- Total load walking
Results

- Early results and experiences, number of cases are not so many
- Correction of the bad position of the foot and ankle
- Stabilization of the talo-crural joint
- Resection of the joint surfaces, fixation with screws
- Post op. complication: partial wound dishealing, but no infection
- There was no loosening of the screws
- We use total contact, custom made AFO after the operation in every case
Results

- Partial load of the affected limb
- The degree of the load was gradually increased
- We were able to adjust the correct position of the ankle and foot
- We were able to restore total plantar surface during walking in every case
- Foot ulcers were healed completely or the surface and size were reduced
Summery

- Arthrodesis is recommended if non-operative methods are cannot treat deformity or instability of the foot and ankle in diabetic neuropathy.
- Arthrodesis of the ankle and subtalar joint allows correction of the deformity and instability.
- The affected limb will be total weight bearing.
- Operation leads total plantar surface during walking.
- The poor quality of the bones can result loosening of metal materials after the operation without AFO treatment.
- Sometimes neuropathy can cause wound healing disorder.
- The major amputation remains the only option if the arthrodesis is insufficient.
Thank you for your attention!