Amputations at Odd Levels

Leila Mureebe, MD
Nancy Payne, CNS
Glenn Hostetter, CP
Odd Levels of Amputations

- Lower extremity levels
- “Ideal residual limb”
- Advantages/Disadvantages of levels
Patient Education

- Pre-op for the hard to decide, decreased LOS
- Earlier referrals to Nancy or prosthetics when an amputation is likely the best option
- May soon be starting an amputee clinic at NC Orthopaedic Clinic with Dr Tawney, physiatry
- Refer to Prosthetics when ready for shrinker or if already in shrinker when healed and ready to fit or pre-op if they have questions.
- Referral to Physical Therapy early keeps strength up.
- Orthotics for foot management of sound side foot
Support Systems

• Amputee Coalition of America – consumer support group, active in lobbying for improved care, patient rights, consumer education.

• Local support groups, Triangle Area Support group meets monthly at Lenox Baker, pediatric group recently started by mother of 4 yr old.

• Peer visiting- arranged more easily with early referral to Nancy or Prosthetics.
Typical Rehab Course

• Many patients go to inpatient rehab from hospital for 1-3 week stay for strengthening, transfers, safety issues as well as OT.
• Usually 4 to 8 weeks healing for vascular patients before ready to mold for prosthetic fitting.
• Rarely re-admitted to inpatient rehab for gait training, outpatient P.T. recommended vs. home health. Linda Fishman, P.T. is our Prosthetics specialist at Lenox Baker.
Classifications of Amputation

- Traumatic  ~15%
- Tumor       ~5%
- Vascular and Diabetic  ~70-80%
- Congenital  ~5%

National Hospital Discharge Survey Data 1989-92

(Need better recording and up-dated data)
Vascular disease

• “the most distal amputation is not always the wisest amputation” Dr. Smith
• Is foot worth saving?
• Is patient left with viable residual limb that can be used for weight-bearing?
Decision-making in Trauma

“a salvaged upper extremity often functions better than currently available prosthetic replacements, while a salvaged lower extremity is often worse than prosthesis unless it can tolerate full weight-bearing, is relatively pain-free, and has durable skin and soft tissue coverage that does not break down when walking is attempted”

Dr. Douglas Smith, University of Washington
Lower Extremity Amputations

- Toes and/or Ray - orthotics, shoe mod.s
- Midfoot - Transmet, Lisfranc – toe fillers, shoes stiffened or rockered
- Hindfoot - Chopart - AFO style prosthesis or PTB, oversize shoes
- Symes - PTB prosthesis with posterior opening or expandable wall for don/doff
Mid-Foot Amputations

- **Indications**
  - Gangrenous process which precludes transmetatarsal level amputation

- **Contraindications**
  - Ischemia
  - Neuropathy (relative)
General Concepts

- Technically more demanding than forefoot or transtibial amputations
- Typical skin flaps (as illustrated later) are rare due to pre-existing tissue loss
- Flaps based on medial or lateral pedicles
- No full weight bearing for 6-8 weeks postoperatively
Lisfranc Amputation

- Disarticulation of mid-foot between tarsal and metatarsal bones
- Regular shoe with insert
- Disruption of peroneus brevis onto the base of the 5th metatarsal leads to varus deformity
Chopart Amputation

- Disarticulation of talonavicular and calcaneocuboid joints
- Commonly complicated by equinovarus foot deformity
  - Results from unopposed tendon action
  - Fix is Achilles’ tendon lengthening
    - Division above insertion onto calcaneus
Partial Foot
Mid-Foot Amputations

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  – Gangrenous process which precludes transmetatarsal level amputation

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  – Ischemia
  – Neuropathy (relative)
Prosthetic options include:

– no prosthesis;

– rigid footplate with arch support combined with a rocker bottom shoe sole;

– custom-molded foot orthosis/prosthesis;
  custom-molded shoes;

– modified ankle-foot orthosis with a toe filler;

– foot prosthesis (a custom-molded socket attached to a semi-rigid foot plate with a toe filler).
Partial Foot Prosthesis
**Toe Fillers**

Definition: Toe fillers are plastazote cushions with fill ins for the spaces left by amputated toes or portions of the foot. They are created from an impression of both feet in a crush box. The negative mold from the crush box is used to create the cushion and toe filler.

Toe fillers are most commonly needed by diabetic amputees, although not exclusively. It is why they are made with plastazote, the material used for diabetic insoles.

Missing toes or any missing part of the foot compromises balance and gait. Toe fillers help return part of what is lost. It is best to have an arch support with a metatarsal lift under the toe filler and cushion where possible to assist in returning more balance and gait function.
The transmetatarsal amputation is more disabling than simple toe amputations, but as in the toe amputations there is no need for a prosthesis other than a shoe filler.

The loss of push-off in the absence of a positive fulcrum in the ball of the foot is chiefly responsible for impairment of gait. The more proximal the amputation, the more disability is present.
Syme Amputation

- **Indication**
  - Same as others
  - No requirement for distal plantar skin

- **Contraindications**
  - Any abnormality of heel or heel pad
  - Pedal neuropathy
  - Diabetes (relative)

  - Late failure rate 53%
• The Symes amputation can be one of the best amputation of the lower extremity.

• When it is done right, it creates an excellent end-bearing stump and allows for a functionally most satisfactory prosthesis.

• When is done badly, the procedure is useless and the patient must be amputated at a higher level.
Technique

• Two stages
  – Wagner’s modification
• Fixation of the heel pad to the tibia
• Maintenance of the posterior tibial artery
First Stage

- Incision planned to create a long posterior flap incorporating heel pad
- Malleolus tip to malleolus tip
- 90 degree turn to create plantar flap
First Stage continued

- Tendons sharply divided
- Joint capsule entered at dorsum of talar neck
- Force foot into plantar flexion
- Dislocate talus
- Medial retraction of vascular bundle
- Transection of Achilles tendon with care – close to skin
- Subperiosteal excision of calcaneus
First Stage

- Heel pad rotated anteriorly
- Deep fascia over anterior tibia sutured to deep fascia of plantar flap
- Single layer of suture
Second Stage

- Wait at least six weeks
- Don’t rush
- Two elliptical incisions over malleoli
- Down to bone
  - Carefully at medial due to posterior tibial bundle
Second Stage

- Take malleoli flush to joint
- Tibial articular cartilage is left in place
Flex-Symes
(Ossur Prosthetic Device)

Flex-Symes is a prosthetic foot specifically for people with symes and pyrogoff amputations.
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Thank you

- COPC
  - 684-2474
- Nancy Payne, CNS
  - 970-1208
Molly, the horse