2018 MID-ATLANTIC
CONFERENCE

8th ANNUAL CURRENT CONCEPTS IN
VASCULAR THERAPIES

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Amputation: How to Manage the Ultimate Vascular Endpoint

No financial disclosures

Epidemiology

- In US, ~60,000 major amputations/year
- DM: 10 fold risk of amputation
- Medicare claims database: number of vascular specialists influences rate of amputation
  - 0.3 fold increase in vascular surgeons → 1.6% reduction in amputations

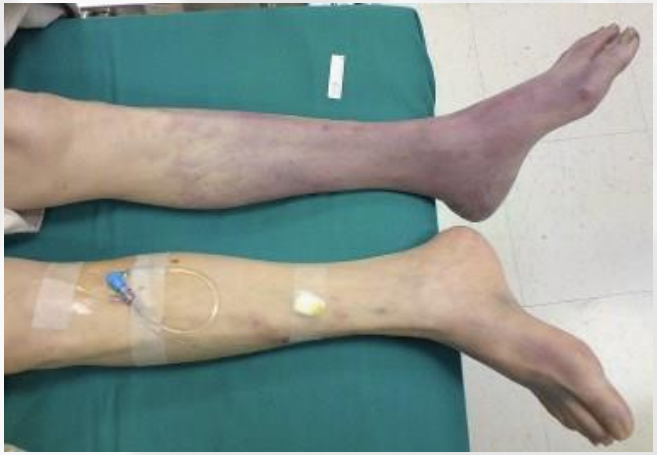
Indications for amputation

- Acute ischemia
- Chronic ischemia
- Foot infection

- Severe traumatic injury
- Lower extremity malignancy

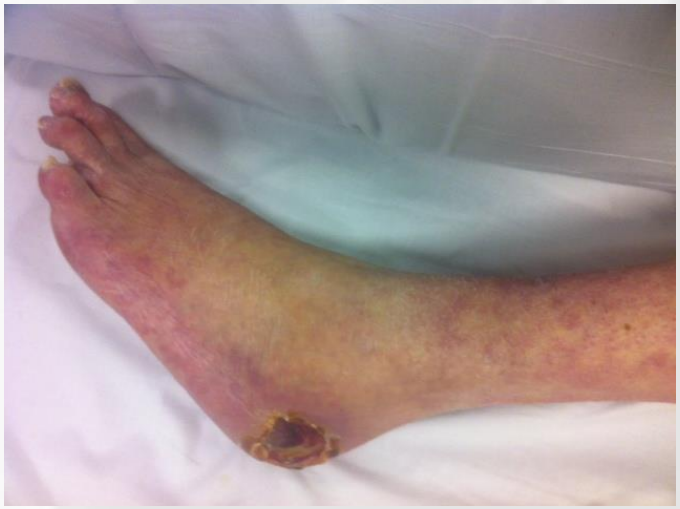
Acute ischemia

- Amputation for:
  - Irreversible ischemia
  - Severe ischemia with no revascularization options
  - Unsuccessful attempts at revascularization



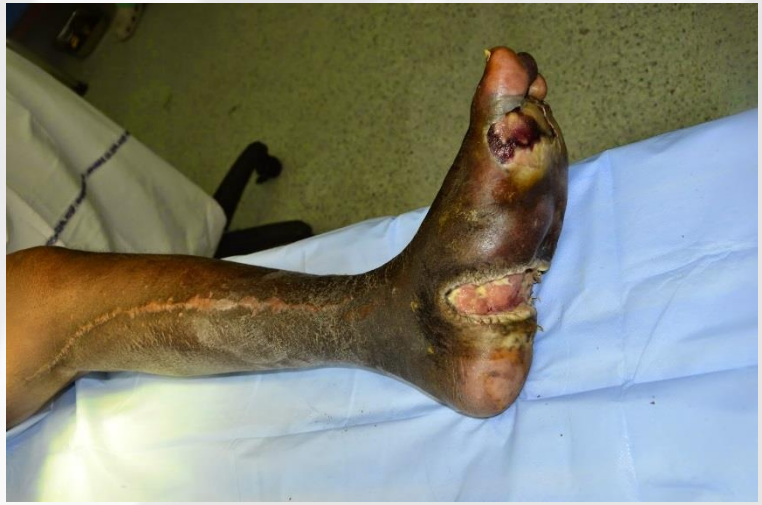
Chronic ischemia

- Amputation for:
  - Failure of revascularization
  - Lack of suitable conduit or target arteries
  - Severe patient co-morbidities
  - Poor functional status
  - Extensive gangrene/infection→ nonsalvagable tissues



Foot infection

- Commonly in pts with diabetes and neuropathy
- Indication for amputation: complication of diabetes 60-80% (Malone JM: Lower extremity amputations. Moore WS)



- Abou-Zamzam AM Jr., et a. Ann Vasc Surg 2003

Indication for Major Amputation	Percentage of cases (N=131)
CLI with failed revascularization	39
Extensive pedal gangrene	15
Unreconstructable arterial anatomy	11
Overwhelming pedal sepsis	9
Excessive surgical risk	9
Nonviable, acutely ischemic foot	8
Nonambulatory status	8

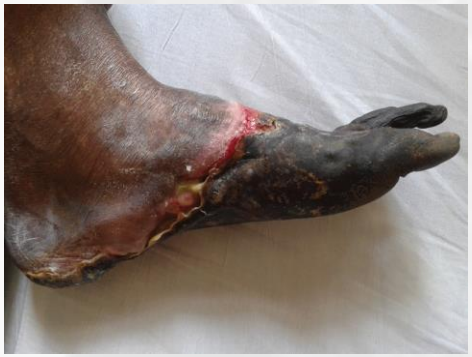
Delay in Presentation

- Mean time to vascular surgery consultation for:
  - Pedal tissue loss: 73 days
  - Ischemic rest pain: 27 days (Nehler MR et al. *J Vasc Surg* 2003)

- Patient factors
- Access issues
- Physician factors

Groups benefiting from primary amputation

- Extensive foot lesions
- Severe comorbidities
- Very unfavorable anatomy



Periop risk

- Mortality ~8%
- Local stump complication: ~10%

Peri-operative Stages

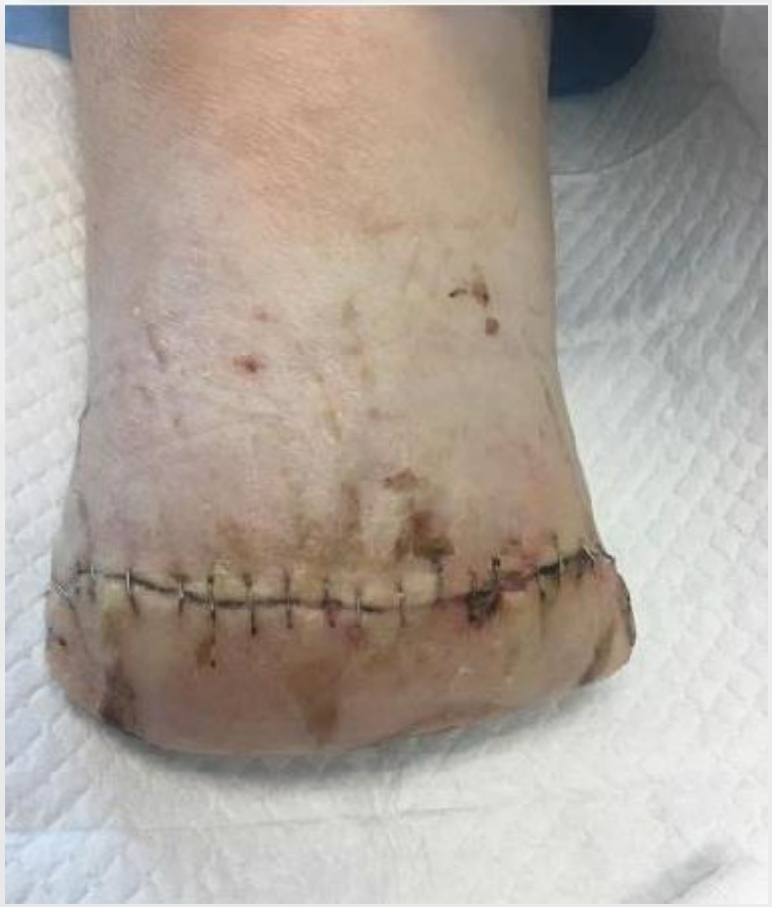
- Stage 1: preoperative stage
- Stage 2: acute post-operative stage
- Stage 3: immediate post-hospital
- Stage 4: intermediate recovery
- Stage 5: transition to stable

Stage 1: Pre-operative stage

- Is amputation required?
- Considerations:
  - Duration/severity of ischemia
  - Extent of tissue loss
  - Infection
  - Functional status
  - Assessment of vascular status
  - Attempts to improve circulation
- Steps to reduce periop complications

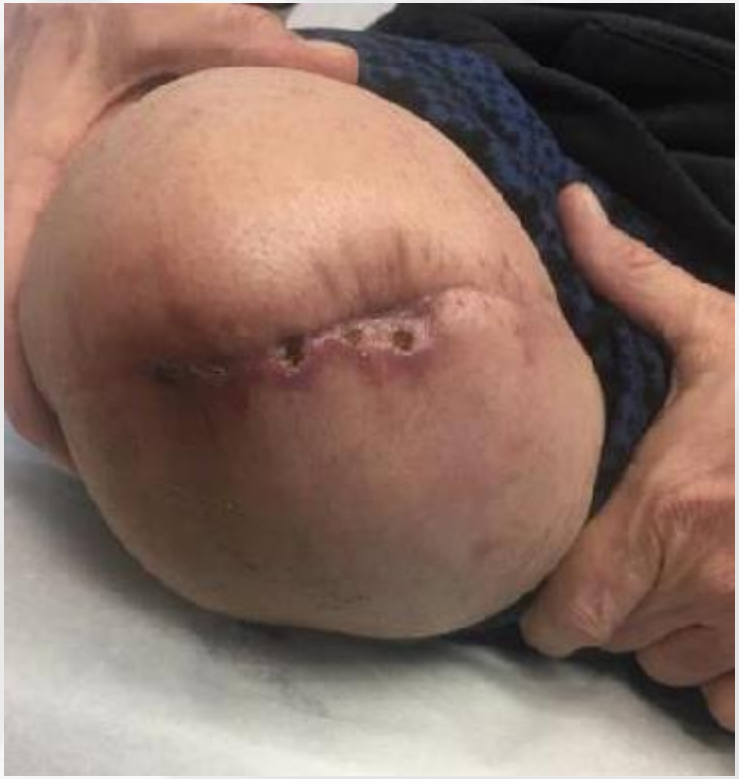
Stage 2: Acute Post-op

- Duration: 3-10 days
- Assessment of local/systemic complications
- Evaluation for transition of care



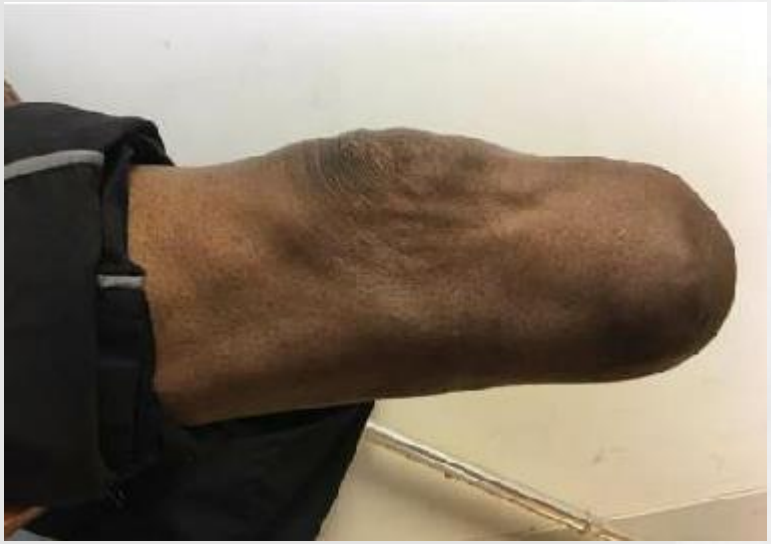
Stage 3: Immediate post-hospital

- From hospital discharge→4-8 weeks
- Wound healing
- Early rehabilitation



Stage 4: Intermediate recovery

- From completed healing→4-6 months
- Most rapid changes in limb volume
- Transition to 1st formal prosthetic device



Stage 5: Transition to stable

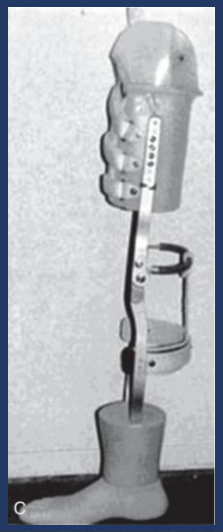
- Relative limb stabilization
- Occasional prosthetic adjustments
- Higher functional training

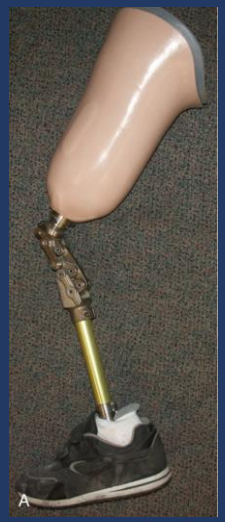
Rehabilitation

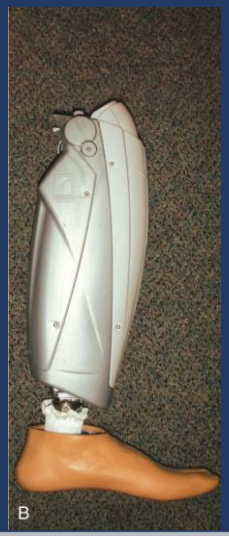
- Energy expenditure

Amputation level	Energy expenditure above normal (%)	Ambulation rate (%)
BKA	10-40	80
TKA	72	30
AKA	63	40-50
Hip disarticulation	80+	0-10

- Prosthesis selection







Prosthesis Selection

- Highly individualized
- Factors: amputation levels, physical conditioning exercise demands, patient preference
- Reasonable goals set

Age-Dependent Functional Outcome

- Pts <60 yo, well controlled co-morbidities, ambulating preop: ambulatory rate 70%, independent living 90% at 1 year
- Pts >70 yo: 4x greater chance of death, 3x less likely to wear prosthetic, 4x loss of functional independence 1 year

Additional Outcome Factors

- Clinical screening for depression
- Role of psychologists, social work, nurses, geriatric and rehabilitation specialists

Summary

- Major amputation prevalent, especially among diabetic population
- Many considerations prior to decision for amputation
- Multiple perioperative and postoperative stages of recovery
- Recovery and rehabilitation require extensive team coordination

Self Assessment Question 1

- Which is the most common cause of major amputation?
  a. Pedal sepsis
  b. Critical limb ischemia with failure revascularization
  c. Nonambulatory status
  d. Excessive surgical risk

Self Assessment Question 2

- What is the approximate energy expenditure above normal for a patient with above knee amputation (AKA)?
  a. 10%
  b. 30%
  c. 60%
  d. 90%

Thank you