Amputation Surgery

Recent advances in lower-extremity amputations
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Reasons for Amputation

Trauma
- It is estimated that 16% of all amputations in the U.S. are the result of trauma.¹
- Results from:
  - Major arterial injury with a warm ischemia time greater than six hours²
  - Complete transaction of the sciatic or posterior tibial nerve.²
  - Additional indicators may suggest amputation.²
- A number of scoring systems or scales have been developed to assist the practitioner in determining the survivability of the limb after trauma.²
  - The Mangled Extremity Severity Score (MESS) is primarily used in the U.S.²
- Muscle injury, absence of plantar sensation, and arterial damage are the three most important factors in determining whether limb salvage or amputation is more appropriate.³

Battlefield Injuries
- Due to the present conflicts in Iraq and Afghanistan, a number of servicemen have been injured and sustained major limb loss.⁴
- The Ertyl or bone-bridging technique for below-knee amputations (BKA) has been employed and found to be more successful for military servicemen who tend to be younger more active patients.⁵
  - Please refer to the Transtibial tab in the research corner for more information regarding the Ertyl procedure.

Ischemia
- It is estimated that 82% of all amputations performed in the U.S. are due to ischemia.⁶
- A vascular evaluation can help to predict the potential for healing, as well as assist in determining the level of amputation.⁴
  - Toe pressures of greater than 40-50mmHg suggest potential for healing.
  - Transcutaneous oxygen pressure (TcPO2) measures oxygen delivery to the skin. Pressures greater than 30mmHg are predictive of healing potential.

Diabetes
- Worldwide, nearly 50% of amputations are due to diabetes.¹
- Patients with diabetes have a 5-15% risk of suffering a major lower extremity amputation in their lifetime.¹
55% will receive a contralateral amputation two to three years after initial amputation\(^1\)
66% of patients will die within five years of their initial amputation\(^1\)

**Amputation Level**

- The higher the level of amputation the slower the walking speed and greater the energy of consumption in walking.\(^4\)
- Little debate exists as to the functional advantages of a transtibial amputation versus a transfemoral amputation.\(^4\)
- Benefits of a knee disarticulation versus a transfemoral amputation include\(^4\):
  - Longer lever arm
  - Improved sitting balance
  - In pediatric patients, continued longitudinal growth and
  - Limited distal bony overgrowth (review)

**References:**
