Amputation Surgery

Recent advances in lower-extremity amputations
- Anderson CD, Stewart JD, Unger DV

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 hours [2]
    - 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)

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