Medical Care of the Amputation Patient

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Amputation is...

- Surgery to remove all or part of an arm or leg
- May be done to treat injury, disease or infection
- May be done to remove tumors from bones and/or muscles
History of Amputations

- Neolithic cave drawings show humans survived amputations from trauma, rituals or punishments.
- The earliest written description is from Babylonia in 1700 BC; the Babylonian code of Hammurabi.
- 385 BC: Plato and Hippocrates.
History of Amputations

- 1st century AD: Celsus used cautery and ligation
- 1528: Gunpowder invented caused increased extremity injuries
- 1529: Pare used thick ligature for tourniquets
- 1588: Cloves first successful AKA
- 16th century: Botallus and Hildanus invented the tourniquet
History of Amputations

- 1679: Younge and Lowdham used local flaps for wound closure (animal bladders used previously)
- 1781: Warren first successful shoulder amputation
- 1812: Jean-Larrey amputated 200 limbs with 11 shoulder disarticulations in a 24 hour period, with 9 complete recoveries
History of Amputations

- 1806: Brashear, first successful hip joint amputation
- 1825: Smith, through the knee amputation described
- 1842: 62% mortality rate for through the thigh amputation
- 1858: Earliest surviving prosthesis discovered in Capri
History of Amputation

- 1873: Eschmarch, rubber bandage rendered amputation bloodless, reproducible and safer
- 1943: Major Kirk, guillotine amputation in a war setting to be completed as distal as possible and then completed under calmer conditions
- 1948: Suction socket and patellar tendon bearing prosthesis
History of Amputations

- 1960 – 1980: Recommendation to salvage knee in vascular amputations
Shoulder Disarticulation

Forequarter Amputation

Trans humeral (above the elbow)

Trans radial (below the elbow)

Wrist Disarticulation
Types of Amputation

- Amputation of digits
- Upper Extremity
  - Shoulder Disarticulation
  - Elbow Disarticulation
  - Above Elbow
  - Below Elbow
Types of Amputation

- Lower Extremity
  - Below Knee (BKA)
  - Symes
  - Forefoot
  - Above Knee (AKA)
  - Knee Disarticulation
  - Hip Disarticulation
Risks

- Joint deformity
- Infection
- Wound dehiscence
- Tissue death
- DVT
- Other (Death, MI, CVA, etc.)
Statistics on Limb Loss

- Nearly 2 million people are living with limb loss in the U.S.
- 185,000 amputations are performed in the U.S. every year
- 2009, hospital costs for amputations exceeded $8.3 billion dollars
Statistics

Main cause of limb loss:
- Vascular Disease 54%
  - PAD, PVD, DM
- Trauma 45%
- Cancer <2%
Statistics

- African-Americans are 4x more likely to have an amputation as Caucasian Americans.
Statistics

- Almost half of vascular amputees will die within 5 years. This is a higher mortality rate than breast cancer, prostate cancer and colon cancer.

- 5% of Diabetics with a LE amputation will require an amputation of their other leg within 2-3 years.
Surgery Concerns

- Appropriate level of surgery
  - Important for circulation and viability of the stump

- Disarticulations more difficult to fit with prosthesis

- Obtaining a smooth bone edge and over sewing the muscle
Surgery Concerns

- Good bleeding/circulation at site
- Immediate post op fitting dependent on need to see the wound
  - Pylon casts for younger people and non-vascular amputations
Post Surgical Care

- Wound Care
- Control Edema
- Ace Wrap/Stump Shrinker/Pylon cast/APOP
- Dog Ears
Post Surgical Care of Pain

- Stump Pain
- Phantom Pain & Sensation
- Neuroma
  - Narcotics
  - Anticonvulsants (Gabapentin, Lyrica)
  - Antidepressants (Elavil, Cymbalta)
Stump Care & Considerations

- Good hygiene
- Monitor skin for pressure areas
- Inspect skin for any open areas and drainage
- Appropriate wound care and healing before prosthetic fitting
- Avoid hip and knee contractures
Prosthetic Fitting

- Pylon Cast
- Knee Immobilizer
UE Prosthetics

- Myoelectric Prosthesis
LE Prosthetics

- AKA Components
- BKA Components
Newer Prostheses

- Kevlar to decrease perspiration and improve fit
- Computerized knee components for improved safety and more normal gait pattern
References

- Medscape: Amputations of the lower extremity: Background, History of the Procedure, Problems

