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Oral Systematic/Meta-Analytic Review Presentations

Oral Presentation 330
Acute Postoperative Care of the Residual Limb Following Transtibial Amputation: A Clinical Practice Guideline

Phillip Stevens (University of Utah School of Medicine), John Rheinstein, James Campbell

Objectives: To create succinct, evidence-based clinical practice guidelines for the acute postoperative care of the residual limb following transtibial amputation.

Data Sources: The clinical practice guidelines were based on peer-reviewed, published meta-anlyses and systematic reviews on this topic identified using MEDLINE through April 4, 2016. Searches were limited to English-language publications using the search terms "amputation," AND "postoperative management," "rigid dressing," OR "soft dressing;" AND "systematic review," OR "meta-analysis."

Study Selection: This search effort yielded 24 abstracts. Detailed review was limited to those articles described as systematic reviews, meta-analyses, and evidence-based guidelines that were specifically directed at the post-operative management of the residual limb following transtibial amputation. Four publications ultimately met this criteria.

Data Extraction: Evidence statements from these published meta-anlyses, systematic reviews and evidence-based guidelines were extracted for subsequent synthesis.

Data Synthesis: Evidence Statements included statements of comparative efficacy, benefits and harms associated with post-operative interventions in the acute management of the residual limb following transtibial amputation. These statements include the following: Compared to elastic bandages, Rigid Removable Dressings (RRD's) reduce the number of days from amputation to both complete healing and hospital discharge (Meta-analysis, Highsmith, n= 288). Compared to elastic bandages, Rigid Dressings (RD's) and RRD's reduce the average time to casting or fitting of the initial prosthesis (Meta-analysis, Churilov, n=527). RRD's are more effective at reducing acute post-amputation edema compared to conventional elastic compression (Systematic review, Highsmith, Nawijn). Compared to soft dressings, RRD's accelerate both residual limb healing times and hospitalization time (Systematic review, Highsmith, Gertzen, Nawijn). RRD's and soft dressings are comparably effective in reducing wound infection rates (Systematic review, Highsmith, Churilov). While some individual clinical trials have examined such variables as pain reduction, consistency of dressing application and reduced incidence of external trauma to the residual limb, these elements have not yet been addressed in systematic review and fell short of the standards for inclusion in the Clinical Practice Guideline.

Conclusions: The following recommendations were generated as clinical practice guidelines for the acute postoperative care of the residual limb following transtibial amputation: Recommendation 1: Rigid Removable Dressings should be used to reduce both the healing time of the residual limb and time to prosthetic fitting following transtibial amputation. Recommendation 2: Rigid Removable Dressings should be used as the preferred means of reducing post-operative edema. Recommendation 3: Given the comparable wound infection rates observed with the two treatment options, Removable Rigid Dressings are preferred over Soft Dressing due to their additional attendant benefits.

However, Clinical practice guidelines are "guides" only and may not apply to all patients and all clinical situations. Thus, they are not intended to replace clinical judgement in the provision of patient care. These guidelines will require updating as new evidence becomes available.

Key Words: Transtibial amputation, Rigid Dressing, Removable Rigid Dressing, Soft Dressing, Clinical Practice Guideline

Disclosures: Phil Stevens, John Rheinstein and James Campbell are paid employees of Hanger Clinic. Phil Stevens is a Practice Manager and Director of the Department of Scientific Affairs for Hanger Clinic and receives a salary. Phil Stevens currently sits on the Board of Directors for the American Academy of Orthotists and Prosthetists and on the Editorial Board of the Journal of Prosthetics and Orthotics, and receives no compensation in either capacity.

Oral Presentation 602
Prosthetic Foot Selection for Individuals with Lower Limb Amputation: A Clinical Practice Guideline

Phillip Stevens (University of Utah School of Medicine), John Rheinstein, Shane Wurdeman

Objectives: To create succinct, evidence-based clinical practice guidelines for the selection of prosthetic foot type for individuals with lower limb amputation.

Data Sources: A Medline search was conducted using the following search terms: "lower limb amputation" AND "prosthetics," "prosthetic feet" OR "components" AND "systematic review" OR "meta analysis."

Study Selection: The original search yielded 96 abstracts. Of these, four papers were identified as secondary knowledge sources (ie, meta-analysis, systematic review or evidence-based guidelines) that synthesized published findings of primary knowledge related to the performance characteristics of prosthetic foot types. An additional, recent publication that had not yet been indexed but had been published was also identified and included.

Data Extraction: In more recent publications, where authors provided explicit evidence statements, these were independently extracted for subsequent synthesis. If explicit evidence statements were not provided, well-supported narrative statements were extracted.

Data Synthesis: Twenty-three direct and extracted statements were considered within the domains of comparative efficacy, benefits and potential harm and are summarized below: The reported benefit of the single axis foot is its rapid ground accommodation in the sagittal plane at loading response for limited walkers (1,4). The benefits of ESAR feet include increases in self-selected walking speed (2,4,5) and both perceived and measured improvements in walking efficiency (1,4,5). Favorable gait measures include an extended stride length (1-5). Favorable kinetics include increased propulsive properties and walking efficiency during level ground ambulation (1), the negotiation of environmental obstacles such as stairs and ramps (1,3) and at elevated activity levels (2,3,5). The potential harms include both objective measurements and subjective report. The magnitude of the initial peak vertical ground reaction force on the sound

side limb, often associated with overuse strain and injury to this extremity, has been observed to decrease with the use of ESAR feet (5). These objective findings are reinforced by subjective reports of decreased limb pain, skin problems and shock or stress at the hip and knee with the use of ESAR feet (5).

Conclusions: The following recommendations were synthesized from the secondary knowledge sources as clinical practice guidelines for the selection of prosthetic foot type for individuals with lower limb amputation. Recommendation 1: For patients ambulating at a single speed that require greater stability during weight acceptance due to weak knee extensors or poor balance, a single axis foot should be considered. Recommendation 2: Patients at elevated risks for overuse injury (ie, osteoarthritis) to the sound side lower limb and lower back should be managed with an energy-storage-and-return (ESAR) foot to reduce the magnitude of the cyclical vertical impact forces experienced during weight acceptance. Recommendation #3: Neither patient age nor amputation etiology should be viewed as primary considerations in prosthetic foot type. Recommendation #4: Patients capable of variable speed and/or community ambulation are indicated for ESAR feet. It is noted that clinical practice guidelines are meant to serve as guides only to the general patient and may not apply to all patients and all clinical situations. Thus, they are not intended to replace clinical judgment in the provision of patient care. These guidelines will require updating as new evidence becomes available.

Key Words: Amputation, Prostheses, Foot

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