

A Step Ahead

Capitol Orthopedic Prosthetic Newsletter

March/April 2005

Loren J. Decker, C.P.

• **Phone:** 913.526.5271

• **Fax:** (913) 661-0180

• **Address:**

11388 Strang Line Rd
Lenexa, KS 66215

LOREN'S LINES

EXCITING NEW TECHNOLOGY HAS ARRIVED AT CAPITOL ORTHOPEDIC CENTER. WE RECENTLY ACQUIRED THE **TRANSTIBIAL AND TRANS-FEMORAL DESIGN CAD SYSTEM** FROM OTTO BOCK. THIS SYSTEM ALLOWS THE PRACTITIONER TO OBTAIN AN IMAGE OF THE RESIDUAL LIMB BY TAKING TWO DIGITAL PICTURES INSTEAD OF USING THE TRADITIONAL PLASTER CASTING METHOD. MODIFICATIONS ARE THEN DONE ON COMPUTER AND A SOCKET IS FABRICATED. THE BENEFIT FOR THE PATIENT IS A MORE REPRODUCIBLE SOCKET SHAPE. THIS METHOD DOES NOT WORK FOR EVERYONE, BUT IS EFFECTIVE FOR A MAJORITY OF PATIENTS. "THE TT AND TF DESIGN CAD SYSTEM PROVIDES A MORE CONSISTENT WELL FITTING SOCKET WHILE PROVIDING QUANTITATIVE TRACKING OF LIMB VOLUME CHANGES", SAID MICHAEL LEACH, CLINICAL SPECIALIST PROSTHETICS/ORTHOTICS OTTO BOCK. **TO LEARN MORE CALL 913.526.5271.**

Post Op— Transtibial Amputation

A recent issue of the *Journal of Prosthetics and Orthotics* had a debate as to the most effective postoperative treatment for a patient with a transtibial amputation. What follows is a brief overview of that discussion.

The Clinical Standards of Practice on Postoperative Management of the Lower Extremity took place in May 2003, the results of that conference were published in a special edition of the *JPO* in 2004. The participants of the conference included orthopedic surgeons, vascular surgeons, physiatrists, prosthetists, physical therapists, and peer counselors.

After a two day meeting, the participants did not come to a consensus regarding the

within these five categories the team found discrepancies in methods of application and the materials used by the prosthetist or requested by the physician.

Furthermore, the group found that "definitive evidence to support the benefit of any single technique is lacking."¹ The following is a description of the five established strategies along with their advantages and disadvantages:

- Soft dressings usually consist of nonadherent dressing over the suture line and most likely an elastic bandage like an ace wrap or stump shrinker. Literature describes the advantages as ease of application, low cost, and being able to access the wound. Some of the disadvantages include: increased likelihood for knee flexion contractures, prolonged bedrest and hospital stays, and possible high pressure on the residual limb proximally. "The incidence of complications related to wrapping and elastic bandages is not well documented."
- The thigh-level rigid dressing with no immediate prosthesis are constructed of soft gauze on the wound, a sterile sock, soft padding as needed, felt pads at the tibial flare regions, and a reticulated distal end pad. These are covered with elastic plaster bandage and some molding is done. Current



Example of rigid removable dressing with cuff suspension.

most effective postoperative management strategy for those who undergo a transtibial amputation (TTA). Options for treatment were categorized as: soft gauze dressing with an elastic wrap, thigh-level rigid plaster dressings without and immediate prosthesis, thigh-level rigid plaster dressings with an immediate postoperative prosthetic (IPOP), shorter removable rigid plaster dressings, and prefabricated pneumatic postoperative prosthesis. Even .

¹ Journal of Prosthetics and Orthotics. 2004; Vol16, Pg. 14-15.

² Journal of Prosthetics and Orthotics. 2004; Vol. 16, Pg. 15.

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11388 Strang Line Rd
Lenexa, KS 66215

Phone: 913.526.5271

Fax: 913.661.0180

loren@capitolorthopedic.com

A Step Ahead: Prosthetic Newsletter In this Issue: Transtibial Post-Op Treatment

Post Op cont.

studies would indicate that this type of postoperative treatment reduces edema, pain, healing time, and increases tolerance to weight bearing which allows for earlier weight bearing on the residual limb. It also aids in preventing knee flexion contractures.

Disadvantages are described as being more difficult to apply and are more costly.

- The thigh-level rigid dressing with an immediate prosthesis has all of the same benefits and it could be argued that there is an emotional benefit to having the prosthetic foot which aids in a better initial self-image. Disadvantages cited include the inability to check the wound and possible mechanical tissue trauma inside the cast.

- Short removable dressings are constructed like a thigh-level rigid dressing, but only to the level of the knee. A foot and pylon may or may not be attached. Again, the main advantages reported is a decrease in healing time and the ability to remove the dressing and check the wound.

- The final category is the prefabricated pneumatic prosthesis. These typically consist of a plastic prosthetic unit with one or more air bladders used for compression. The claim is they are lighter weight and have more controlled compression on the residual limb. They still allow removal for wound inspection. Disadvantages are expense, bulkiness and difficulty donning and doffing. This type of prosthesis may also be used with

no air bladder which is usually less expensive and less bulky.

As stated earlier, all studies are descriptive and do not have statistical support to show one method is better than another. It appears as though what can be determined is that a rigid dressing, of some kind, will facilitate faster healing for the patient when compared with a soft dressing only method. This debate will no doubt continue until scientific evidence provides the rehabilitation team with a clearcut method of treatment for the patient.

(Thanks to the *Journal of Prosthetics and Orthotics* and the authors of "Postoperative Dressing and Management Strategies for Transtibial Amputations: A Critical Review" for their contribution to this article.)