

# First Step

A Guide for Adapting to Limb Loss

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# UPPER EXTREMITY

by Sean Toren

**I**f you're about to undergo — or have recently undergone — amputation surgery, you're sure to have questions about everything from the kind of prosthesis you'll be fitted with to how long it will take you to get back to your normal, productive lifestyle. This article is designed to introduce you to such information, and hopefully to prepare, educate and motivate you to participate as actively as possible with the team of professionals who will be helping you.

## Prepare yourself with education

Amputations may be performed for a variety of reasons, including trauma caused by accidents, conditions present at birth, and disease (such as cancer, diabetes or vascular disease). No matter what the cause or level of your amputation, your attitude and motivation to participate in your therapy are essential ingredients to your successful rehabilitation.

One of the first things you can do is to prepare yourself as thoroughly as possible.

- Talk with your surgeon about the surgery and what you should expect.
- Speak with your physical or occupational therapist, who can give you preparatory strengthening exercises that can speed your recovery after surgery.
- Contact your prosthetist about prosthetic options. It's important that your prosthetist is certified, well acquainted with both myoelectric and body-powered systems, and familiar with new training, testing, and functional devices so that he or she can help determine the best system for you.
- Read or view any educational materials these professionals recommend.
- Finally, speak with fellow amputees — people who have been through similar experiences and can answer your questions.

## The surgery

Your surgery is the beginning of a “reconstructive plan” that includes your therapy and prosthetic fitting and is designed to help you recover successfully. First, a decision will be made concerning the level of your amputation, but your doctor will generally try to save as



much of the limb as possible.

There are various levels of amputation, each requiring different recovery therapy and prosthetic solutions:

- Transcarpal (through the hand)
- Wrist disarticulation (at the wrist)
- Transradial (through the forearm)
- Elbow disarticulation (at the elbow)
- Transhumeral (through the humerus)
- Shoulder disarticulation (at the shoulder)
- Forequarter (above the shoulder, removing the scapula and clavicle)

The surgery itself usually takes about an hour. Your surgeon will make an incision through skin, muscle, blood vessels, nerves, ligaments, and, if necessary, bone. An extra section of skin is retained and then sewn or stapled over the residual limb.

After the surgery, a protective dressing of gauze bandages will be applied to protect and gently compress the residual limb. There may be a drainage tube coming out of the bandages to rid the residual limb of excess body fluid. This tube will be removed after a few days, and the staples or sutures will be removed in about two weeks.

Once this initial dressing is changed, elastic bandages may be applied. These help control



swelling and prepare your limb for later prosthetic fitting.

### Recovering from the surgery— coping with change emotionally

The days and weeks right after the amputation surgery can be difficult for anyone. Losing a limb can cause disbelief or shock. You might feel angry about the change in your life, sad about the loss, uncertain about whether you'll be able to return to work or favorite activities, worried about your appearance. It's important to accept these emotions as normal and talk about them with family, friends, your professional team, and other amputees. Remember that other amputees have a good perspective on the process. Many have accepted their change, adapted to their situation emotionally and physically, and gone on to lead rich, active lives.

### Coping with change physically

You may have some pain after your surgery but your doctors and nurses will make sure you receive pain medication, most probably with a Patient Controlled Analgesia (PCA) that you can administer to yourself as needed.

### Phantom sensations and pain

Most new amputees experience phantom sensations such as itching, tingling, movement or even pain where the amputated limb used to be. These sensations are not generally indicative of other problems and usually disappear within a month.

### Preparing for your fitting

Within a day or two after surgery a physical or occupational therapist will prescribe therapy to help prepare you for your prosthesis. This therapy may include active exercises, isometric exercises, stretching, desensitization of your residual limb, and education regarding body positioning while resting to prevent your muscles and joints from becoming inflexible. You may also be taught how to wrap your residual limb with elastic bandages or tight "shrinker" socks to reduce swelling and shape the limb, preparing it for the prosthesis. It is



important that you understand your therapy and participate fully in it. A good attitude and the motivation to work hard will speed your recovery and make it as successful as possible.

### The prosthesis

Your upper-limb prosthesis may be a body-powered or an externally-powered myoelectric system.

Body-powered systems consist of a harness with cables attached to the prosthetic components. Contraction of large muscles can open

or close a prosthetic hand, or flex an elbow, by pulling on the cables.

Myoelectric systems are powered by batteries but actuated (turned on) through the use of your body's own electrical signals. In a myoelectric hand, for example, small sensors can read forearm muscles and know when to open or close the hand.

Both systems have their own advantages and disadvantages, depending on your needs. Body-powered systems are generally lighter and tougher, but require the use of muscle groups that must also perform other functions. Myoelectric devices are often closer cosmetically to a natural hand or arm and have the advantage of using the same remnant muscles, such as in the forearm, that originally were used to open and close a natural hand. Their disadvantages are that they can cost and weigh more than body-powered prostheses.

Talk with your prosthetist about which system — or combination of systems — will best fulfill your cosmetic and functional needs.

### The fitting

Fitting for the prosthesis will take place once your residual limb has healed, is no longer

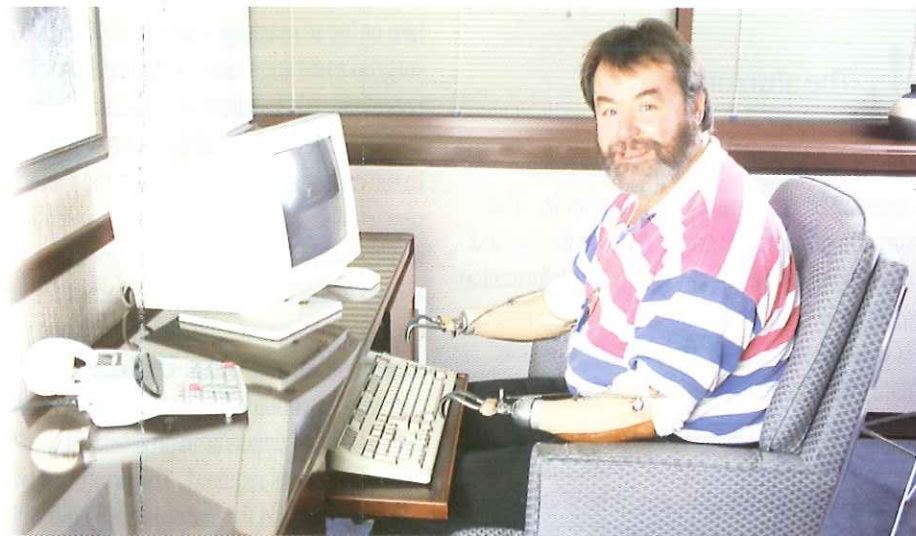


tender or sensitive, and is no longer swollen. This usually takes from four to six weeks after the operation. Your prosthetist will discuss your functional and cosmetic needs, the level of your amputation and shape of your residual limb, your previous activity level and age, your range of motion, and available funding with you. Your doctor will then write a prescription based on your prosthetist's recommendation.

During your first visit the prosthetist will make a cast of your residual limb out of plaster so that a test socket can be made. The test socket is manufactured from a thermoplastic material and then fitted and refined during your following visits. It's important to obtain a well-fitting socket so that your prosthetic device can be attached without irritation, so this is a time to be patient and really work with your prosthetist to get the fit just right. Once the test socket has been refined, a "definitive," or final, socket will be made from lightweight thermoplastic or from a resin-matrix composite similar to fiberglass.

### Caring for your prosthesis

The normal life expectancy of a prosthesis is about five years, although, as with any mechanical device, the better you care for it the longer it's going to last. Your prosthetist will explain to you how to keep your prosthesis clean and well maintained. Weight gain or loss can affect the fit of your socket, too, and may necessitate a new fitting.



### A new beginning - using your new prosthesis

#### From an Amputee's Perspective

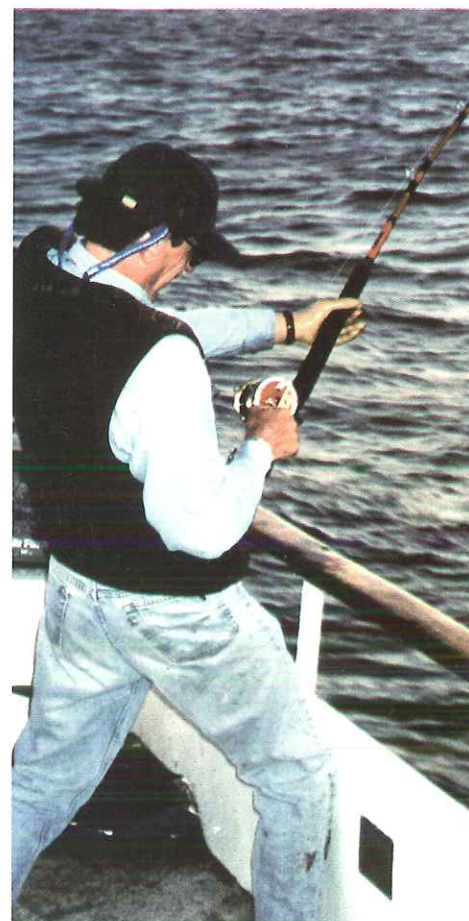
"Once you get your prosthesis it's just the beginning. Now you have to learn to use the thing," says Rick Schmierer, an upper-limb amputee for over 30 years. As a myoelectric technician at Otto Bock Health Care who now works every day repairing and maintaining sensitive myoelectric hands just like the one he uses, Rick knows about frustration — and conquering it. He argues that it all comes down to the right attitude and being motivated to work hard at learning to use your new "tool."

As you begin to use your prosthesis it is important to work closely with your occupational therapists. They'll help you to relearn such actions as brushing your teeth, popping the cap off a bottle, or driving your car.

But be patient; many new prosthesis wearers get depressed as they encounter difficulties using their devices. Rick says that this is natural once the excitement of receiving the new prosthesis wears off, but stresses that it's important to stay motivated and "think about what you can do, not about what you can't." He also encourages new amputees to talk with others. "Once you start networking with other amputees, you'll be amazed at what you can do," he says.

Your prosthetist will be able to put you in touch with amputee support groups. You may also want to contact the Amputee Coalition of America toll-free at 1-888 / AMP-KNOW or visit the Web site at [www.amputee-coalition.org](http://www.amputee-coalition.org)

*Rick Schmierer fighting the good fight while wearing his Otto Bock SensorHand.™*



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