Replantation

Replantation refers to the surgical reattachment of a body part (such as a finger, hand, or toe) that has been completely cut from the body. The goal of replantation surgery is to reattach and restore function to as much of the injured part as possible.

Sometimes, replantation of a lost body part is not possible because the part is too damaged. If the lost part cannot be reattached, a patient may have to use a prosthesis, a device that substitutes for a missing part of the body. In some cases, a prosthesis may give a person without hands or arms the ability to function.

Replantation is usually recommended when the replanted part will work at least as well as a prosthesis. For example, a surgeon would not reattach a missing hand knowing that it would not work, be painful, or get in the way of the patient’s everyday activities.

Before surgery, the doctor will explain the procedure and how much function is likely to return following replantation. The patient or family member must decide whether regaining use of the body part justifies the long and difficult operation, time in the hospital, and months or years of rehabilitation.

Procedure

There are a number of steps in the replantation process. First, damaged tissue is carefully removed. Then, bone ends are trimmed before they are rejoined. This makes putting together the soft tissue on either side of the wound easier.

Arteries, veins, nerves, muscles, and tendons are stitched together. Uncovered nerves, tendons, and joints may be covered by a free-tissue transfer, where a piece of tissue is removed from another part of the body, along with its arteries and veins.

Finally, areas without skin are covered with skin that has been taken from other areas of the body.

Recovery

Recovery of use depends on regrowth of two types of nerves: sensory nerves and motor nerves. Sensory nerves carry messages to the brain from different parts of the body to signal pain, pressure, and temperature. Motor nerves carry messages from the brain to muscles to make the body move.

Nerves grow about an inch per month, and this fact helps doctors estimate the length of the recovery. For instance, in a fingertip injury, the number of inches from the injury to the tip of a finger provides an estimate of the minimum number of months after which the patient may begin to feel something with that fingertip.

Physical Therapy and Rehabilitation

Complete healing of the injury and the surgical wounds is only the beginning of a long process of rehabilitation. Physical therapy and temporary bracing are important to the recovery process.

Braces are used from the beginning to protect the newly repaired tendons, and to allow the patient to move the replanted part. Physical therapy exercises are used to prevent the joints from becoming stiff, to keep the muscles moving, and to minimize the formation of scar tissue.

Even after a full recovery, replantation patients may find that they cannot do everything they wish to do or did before the injury and surgery. Tailor-made devices help many patients to do special activities or hobbies. A physician or therapist can provide more information about such devices.

Many replantation patients are able to return to the jobs they held before the injury. When this is not possible, patients can seek assistance in selecting a new type of work.
The Patient's Role in Recovery

The patient has an important role in the recovery process. Smoking causes poor circulation and may cause a loss of blood flow to the replanted part. Also, if the injury occurs in the hand, allowing the replanted part to hang below heart level for extended periods of time may also cause poor circulation to the replanted part and deter recovery.

Emotional Aspects of Recovery

Replantation can affect a patient's emotional life as well as the body. When bandages are removed, a patient may feel shock, grief, anger, disbelief, or disappointment because the replanted part simply does not look like it did before. Worries about the look of a replanted part and how it will work are common. Talking about these feelings with the doctor helps many patients come to terms with the outcome of the replantation. The doctor may also ask a counselor to assist with this process.

During recovery, it is important to stay in the flow of life. You have many great gifts. Even with the best medical care, you need to be strong during the course of recovery. Remember that quality of life is directly related to your attitude and expectations, not just regaining limb use.

When Additional Surgery Is Needed

Some patients who have fully recovered from replantation surgery may need additional surgery to regain full use of the part. Some of the most common procedures are:

- Tenolysis: frees tendons from scar tissue
- Capsulotomy: releases stiff, locked joints
- Tendon or muscle transfer: moves tendons or muscles to an area that needs the tendon or muscle more
- Nerve grafting: replaces a scarred nerve or a gap in the nerves to improve how the nerve works
- Late amputation: removes the part later because it does not work or has become painful

Outcomes

The replanted part never regains 100% of its original use and most doctors consider 60% to 80% an excellent result. Generally speaking, patients who have not injured the joint will get more movement back than those who have. A cleanly cut part usually works better after replantation than one that has been crushed or pulled off.

Younger patients have a better chance of growing their nerves back compared with adults. They may recover more feeling, and may regain more movement in the replanted part.

Cold weather can be uncomfortable for patients with replanted body parts. It is a frequent complaint, even for those with an excellent recovery.

Co-developed with the American Society for Surgery of the Hand

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