UCLA Hand Transplantation Program brings new treatment option to the region

UCLA has begun offering an innovative Hand Transplantation Program to provide limbs from suitable donors to carefully selected patients who have lost one or both hands. The new program — one of only a few such programs in the nation and the only one on the West Coast — places special emphasis on treating battle-wounded veterans, but is open to others who have lost their limb for reasons other than birth defect.

Patient Selection

While hand transplantation can be a life-altering procedure, unlike other transplant surgeries it is not a life-saving one. Patients must be carefully evaluated before they can be actively enrolled in the program to ensure that the quality-of-life benefits of the operation will, in their case, outweigh the risks of both the procedure and the lifetime of immunosuppressant therapy that follows.

Many hand amputees are well-served with the use of a prosthetic limb, while for some patients, particularly double amputees, prosthetic limbs may not provide an adequate solution. Prospective transplant recipients at UCLA must have a minimum of six months with a prosthesis to demonstrate to themselves and to the transplant team how well that works for them and to ensure that they understand the alternative to transplantation.

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Potential transplant patients must undergo a thorough psychiatric evaluation to assess their suitability as transplant recipients. The rigorous physical therapy and lifelong immunosuppressant therapy that follow the operation require highly motivated patients who understand the undertaking and are willing to commit to a successful outcome. Most patients who have lost a limb have been severely traumatized, and it is important to evaluate their readiness for so significant a procedure as well as their attitude about a foreign limb being incorporated onto their body.

UCLA team and the transplant procedure

The Hand Transplantation Program brings together the best that UCLA has to offer in a wide range of medical, surgical, psychiatric and ancillary services. These include experts in transplantation surgery, hand surgery, and plastic surgery; transplant medicine; immunology; infectious disease; psychiatry; musculoskeletal vascular and neuro-radiology; transplant pharmacology; dermatopathology; neurology; hematology; rehabilitation and social work. UCLA’s longstanding organ transplantation expertise provides the infrastructure needed for this type of program and the model for the kinds of interdisciplinary collaborations that it relies upon.

The hand transplant surgery is very similar to hand replantation. Two bones, two arteries, four veins and over 20 tendons must be meticulously attached in a surgery that typically lasts from nine to 16 hours.

As with other transplant procedures, the donor must be matched to the recipient. This is done based on tissue qualities and to achieve a good size, gender, hair pattern and color match. Hand transplantation need not be done immediately following the loss of the patient’s natural hand; hand transplantation can follow years or even decades after the limb has been lost.

Immunosuppression and rehabilitation

Immunosuppression following hand transplantation is currently modeled on protocols that have been used for kidney transplantation. It is hoped that, with more patient experience, the required level of immunosuppression will decrease. The number of hand transplant cases is currently too low — fewer than 50 have been performed worldwide — to determine immunosuppression needs via clinical research.

Soon after the operation, patients are able to move the fingers on their transplanted hands using the new tendon attachments. Sensation and fine motor control of the hand must wait until the nerves regenerate from the point of amputation. This occurs at a rate of approximately one millimeter per day or an inch per month. Almost immediately after surgery, the patient begins a rigorous rehabilitation program that continues long after they have returned home. Rehabilitation requires a good deal of discipline and dedication to complete the hours of work required each day in order to achieve the fullest possible function in the transplanted limb.