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BE ABLE TO FEEL AGAIN

Hand transplant is a treatment option for people who have had one or both hands amputated. In a hand transplant, one or two donor hands and a portion of the forearms are received from a person who has died. Hand transplants are specialized procedures performed in only a few transplant centers worldwide.

Although not guaranteed, a hand transplant may help to regain some hand function and sensation. While a hand transplant can improve the quality of life, it is a lifelong commitment to treatment. Special medications (immunosuppressants) are to be taken and routine physical therapy and doctor appointments to check on the condition of the donor hands are to be implemented.

The roots of limb transplantation date back to the fourth century when twin saints Cosmas and Damian described the transplantation of a cadaveric leg, replacing a cancerous one. It highlighted early human longing for successful limb transplantation.

In 1964 the first hand transplant was attempted by surgeons in Ecuador, without the benefit of modern immunosuppression. The allograft was rejected within several weeks. Attempts continued subsequently in laboratories but a human hand transplant would not be attempted again for another 34 years, until 23 September 1998 in Lyon. The recipient was a 48-year-old man who had lost his right arm in a saw accident four years earlier. The operation was initially successful but the patient suffered multiple episodes of rejection, became disassociated with the grafts, non-compliant with immunosuppression and ultimately requested graft removal in 2001.[1]

A hand transplant is performed in selected cases in an attempt to improve quality of life and to give some function and sensation to new hands. Hand transplantation is an option available for patients with amputations or injuries of the arm or hand. This includes military personnel returning from active duty. Regaining an arm or hand can vastly improve the quality of life of a patient, allowing them to continue doing daily tasks that they may not have been able to do before.

Patient Eligibility. A number of considerations is determined for the suitable candidate to get hand transplantation. In addition to several screening tests, the following listed factors are to be considered:

- Patients should be between the ages of 18 and 60.
- Patients should have had amputations performed at least six months prior to consultation; during this time, prosthetics and rehabilitation must also be considered before considering transplantation.
- Patients should have no history of malignancy within the last 10 years.
- Patients should have no co-existing medical conditions that may affect results such as Diabetes or bleeding disorders.
- Patients should have no congenital anomalies causing loss of limb

- Women who are pregnant will not be considered, and agree to take reliable contraception for 1 year following transplantation.
- BMI should be less than or equal to 35.

What is a hand/arm transplant surgery like?

The human hand consists of 27 bones, 28 muscles, 3 major nerves, 2 major arteries, multiple tendons, veins and soft tissue. Hand transplant surgery is complex and can last from 8 to 10 hours. It involves bone fixation, reattachment of arteries and veins and repair of tendons and nerves.

Patients waiting for a hand donation can be called into the hospital for surgery at any time. After surgery the patient will be placed in a surgical intensive care unit (SICU) for several days. Once the surgical team feels comfortable to move the patient out of the SICU, the patient will be moved to a transplant unit, where the expected duration in the hospital is from four weeks to three months. The amount of time spent in the hospital depends on a number of factors, including the amount of support and assistance the patient has at home, as well as the distance from home to the hospital for follow-up care, and any delays that might occur in recovery.[2]

Rejection of a donor hand happens when the body's immune system treats the donor hand as foreign to the body. Like invading viruses or bacteria, the immune system will then try to destroy the donor hand. Rejection can happen in two ways:

Acute rejection. Acute rejection happens when the immune system tries to quickly destroy the tissues in the donor hand. It can also happen when the immune system sends special proteins (antibodies) to attack blood vessels and tissues in the donor hand.

Acute rejection usually can be controlled with medications, but in rare cases, the donor hand or hands have to be removed. A previous acute rejection doesn't disqualify the patient from having another hand transplant, but it may make it more difficult to match the patient with a donor.

Chronic rejection. Chronic rejection happens over a longer period of time. The hand transplanted may become painful and lose function. The patient may notice a loss of hair on the hand transplanted or changes in fingernails.[3]

The patient will be taught to watch for early signs of rejection. The patient has to report any changes in the appearance or sensation in the hand to transplant team. If the transplant team suspects the body is rejecting the donor hand, the patient may need to begin taking more anti-rejection medications. The transplant team will likely order tests to be done on the hand transplanted, including a biopsy of the tissue in the donor hand.

Immunosuppressants are medications to be taken to prevent the body from rejecting the donor hand or hands. Immunosuppressants are powerful medications that need to be taken for the rest of the patient’s life. Major side effects of immunosuppressants are the following:

- Increased risk of serious infections, including cytomegalovirus (CMV)
- Increased cancer risk
- Kidney damage
- Increased risk of developing diabetes
- Osteoporosis
- Increased cholesterol, increasing the risk of heart disease[4]

Potential benefits. In solid organ transplantation (SOT), such as liver or heart, transplantation is essential for life. Function is defined by the physiological and biochemical properties of the organ. Surgeons rarely hesitate when discussing these

operations. However, in the case of hand transplantation, the patient will survive without the transplant and so the operation is not lifesaving. In fact, undergoing the operation has risks associated with it, which can increase mortality.

While the procedure does not increase quantity, there is a potential increase in quality of life. As a result, hand transplantation has been noted as a life giving/improving procedure. This perceived improvement in quality is a highly subjective measure and a new hand can mean different things to different people. Since the only measure is quality, many doctors argue that the risks of the operation are not justified by unquantifiable.

How many total hand/arm transplants have been performed worldwide? More than 85 patients have received hand/arm transplants at institutions around the world. The longest surviving hand/arm transplant is the first U.S. recipient at 11 years.

Conclusion. Thus, a hand transplant can give hope for a full life for the person with lost limb.[5]

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