

Medical Observer

Surgery gives quadriplegics hand movement

by Joanna Johnson

TWO Victorian quadriplegics recently underwent surgery designed to increase their independence by improving their hand grasp.

The surgery was performed at Melbourne's Austin Hospital as part of a clinical trial of an electrical stimulation device.

During a six-hour operation eight electrodes are attached to the patient's forearm muscles. A radio-frequency powered muscle stimulator is implanted under the skin in the chest, in a position similar to that of a pacemaker. It

receives its commands from an external portable computer.

Movement of the patient's shoulders back and forth controls the opening and closing of the hand.

"If you've never lost the ability to grasp with your hand, you forget how much it means to you," said Mr Mike Keith, a visiting American surgeon who assisted plastic surgeon Mr Gerard Sormann with the surgery. Without control of finger movements quadriplegics are dependent on the assistance of family members or paid attendants to perform simple activities of daily living

such as eating, drinking, teeth cleaning, writing or shaving.

The surgery is not suitable for all quadriplegics. Nerves that supply the forearm muscles must still be functioning. Patients must also have the psychological capability to cope with the intense training required. Only those who have been quadriplegic for at least 12 months are considered, to ensure the maximum level of natural recovery has been reached.

"This kind of surgery is probably applicable to 15 to 25% of quadriplegic patients," Mr Keith said.

The two Victorian patients, a

21-year-old man and a 31-year-old woman, are both victims of swimming accidents. At least three, possibly five, people will be implanted at the Austin during the next three years, depending on the availability of funds. Each function electrical stimulation device costs around \$US10,000, though Mr Keith suggests that product engineering could eventually halve this cost.

The Austin is one of only six hospitals in the world and the only one outside the US invited to take part in the trial. Fifteen patients have so far been implanted in the US. **MO**